

Friday 3:30 Strategies for Navigating the 4 Levels of Inquiry

Length: 1 **Desiree Sujoy, Aimee Tait** **Thoroughbred 4**
Session 67 Gathering Data
P E M H Environmental Science Physics Chemistry Earth / Space

We will provide examples of the 4 different levels of inquiry: confirmation, structured, guided and open. Teachers will be immersed in learning through participation in two hands on labs and one virtual lab, and we will discuss specific strategies for how to meet the needs of special populations. We will conclude with a discussion of the benefits of each level.

Friday 3:30 Using STEAM as the Engine for Innovation

Length: 1 **Kyle Holloway, Jessica Klosinski** **Thoroughbred 7**
Session 68 Phenomena
P E Physics Engineering Design

Learn how the last two years has seen our school transform learning through the STEAM Lab. See and learn how tech resources can be scaffolded to meet the needs of multiple grade levels while building capacity in students and teachers. From tackling logistics of scheduling and resources to pedagogy that brings out the best from ALL students, prepare your students for the next step in learning.

Friday 3:30 Virtual Labs You Can Conduct and Grade in Under an Hour

Length: 1 **Dr. Janice Gobert, Cam Betts** **Thoroughbred 2**
Session 69 Reasoning From Evidence
E M H Physics Chemistry Earth / Space Sciences

Learn about virtual labs (grades 5-10) that grade themselves and allow students to practice authentically forming questions, collecting data, analyzing data, and communicating findings with a claim/evidence/reasoning framework. Participants receive a detailed rubric to use with hands on labs, and a free trial to use InqITS.

Saturday 8:30 National Board Certification Q&A

Length: 1 **Brian McDowell** **Thoroughbred 8**
Session 70 No Strand
P E M H Biology / Life Science Environmental Science Physics

Now more than ever, teachers must prove themselves in a constantly changing education landscape. Board certification allows teachers to hone their practice, showcase their talent in the classroom, and demonstrate their dedication to their students and their profession.

Saturday 8:30 Argument Driven Inquiry in the Elementary Classroom

Length: 1 **Dr. Victor Sampson** **Regency 2B**
Session 71 Reasoning From Evidence
E Engineering Design

This session is an introduction to a new approach to lab instruction called Argument-Driven Inquiry (ADI). ADI is an innovative instructional model that is based on current research about how people learn science and is designed to foster the development of science proficiency. This instructional approach gives students an opportunity to learn how to read, write, and speak in the context of science. In this session, participants will learn about the stages of the ADI instructional model, how it was designed to address the shortcomings of current laboratory experiences, and how it is aligned with the best practices for teaching science as well as learn about ways to support students during each stage of the approach.

Saturday 8:30 CER: How do you get students from novice to proficient

Length: 1 **Kori Rogalinski** **Thoroughbred 6**
Session 72 Scientific Communication
M Biology / Life Science Environmental Science Physics

Learn different ways to scaffold the CER process for students.

Saturday 8:30

Energy Rock Performances

Length: 1

Whit Pennington, Tyler Cvitkovic

Thoroughbred 3

Session 73

E M H

No Strand
Earth / Space Sciences

An interdisciplinary activity to harness creativity as students assemble musical groups and write songs to perform about energy sources, electricity, and conservation and efficiency. Energy Rock Performances is an activity that can be adapted for use in grades 3-12. In this cooperative learning activity, student groups research energy sources, then write and perform their own energy rock song, along with an introduction and interview.

Saturday 8:30

Green Schools in Kentucky

Length: 1

Ashley Hoffman, Wesley Bullock, Brittany Wray

Thoroughbred 7

Session 74

P E M H

Gathering Data
Environmental Science Engineering Design

Join us to learn more about utilizing the Kentucky Green and Healthy Schools and Project Learning Tree Green Schools programs to incorporate interdisciplinary educational resources that extend the classroom outdoors. Receive K-12 resources, help student-led Green Teams, certify your school as a PLT GreenSchool and Kentucky Green and Healthy School: Learn how these programs create healthier environments and save money!

Saturday 8:30

Introducing Science Topics on a Giant Map of Kentucky

Length: 1

Jill Brown, Scott Dobler

Regency 3

Session 75

P E

Phenomena
Biology / Life Science Environmental Science Earth /

National Geographic has developed a Giant Traveling Map of Kentucky that is the size of your classroom. There are many lessons that have been developed for an entire classroom to engage in. The Kentucky Geographic Alliance will present environmental and weather lessons that you can use with your students. All participants will have the opportunity to get the map to their school.

Saturday 8:30

Implementing a TCT in High School

Length: 1

Dawn Reinhard, Debbie Brock

Thoroughbred 4

Session 76

H

Reasoning From Evidence
Biology / Life Science Chemistry

Join us for an informal session to learn about the TCT process from design to implementation. Begin to understand the thinking behind the TCT design, then collaboratively work on a TCT in preparation for implementation to take back to your school. Ideas for scaffolding, etc.

Saturday 8:30

MakerMinded: Digital Portal to STEM & Advanced Manufacturing

Length: 1

Brittany Garrett

Thoroughbred 5

Session 77

M H

Scientific Communication
Biology / Life Science Environmental Science Physics

MakerMinded is preparing students to fill the demand in the advanced manufacturing industry. Explore how schools in Kentucky have successfully utilized the MakerMinded competition to promote student engagement with local and national STEM activities related to advanced manufacturing. Learn about available activities and prepare a plan for getting students and teachers your school involved.

Saturday 8:30

Science Assessment System: State Summative Assessment

Length: 1

Rae McEntyre (KDE)

Thoroughbred 1

Session 78

E M H

No Strand
Biology / Life Science Physics Chemistry Earth / Space

This session will discuss the state summative test for grades 4 and 7 and the field test for Biology EOC. You will learn about the test development process, tools used and the instructional implications.

Saturday 8:30 Teaching Engineering with Drones

Length: 1 **Anne Lopez** **Scott-Woodford Room**
Session 79 M No Strand
Engineering Design

This session will cover teaching the engineering design process using drones as a tool for engagement in the STEM classroom. The session will outline the 9 week curriculum for the course, as well as showcasing the drone kits & software used and student generated CAD additions to the drone kits.

Saturday 8:30 Teaching with Talk Partners/Learning Groups

Length: 1 **Chris Lacy, Kim Sparkman** **Thoroughbred 2**
Session 80 E M H Scientific Communication
Biology / Life Science Environmental Science Physics

Learn how to promote scientific communication between classroom students via talk partners and learning groups in a science classroom setting. Together we will discuss, practice, and demonstrate how to use a blend of Growth Mindset, Kagan Strategies, and Formative Assessment to promote discussion, questioning skills, and lateral classroom communication.

Saturday 8:30 Using Phenomena to Engage Students in Science

Length: 1 **Desiree Sujoy, Aimee Tait** **Jessamin-Franklin Room**
Session 81 P E M H Phenomena
Environmental Science Physics Chemistry Earth / Space

What is Phenomena and what makes it engaging? By centering science education on phenomena that students are motivated to explain, the focus of learning shifts from learning about a topic to figuring out why or how something happens and connects that learning to the natural world. Explore examples of phenomena-based lessons as we share resources to get you started on building your own phenomena-based science lessons.

Saturday 9:45 Actual Living Scientist (Teachers!)

Length: 1 **Dr. Amanda Glaze** **Jessamin-Franklin Room**
Session 82 P E M H No Strand
Biology / Life Science Environmental Science Physics

As science education grows to become more dynamic in nature and practice, so too must our conceptions of science teachers. A recent hashtag explosion on Twitter highlighted #ActualLivingScientists to point out that there are scientists everywhere and provide an introduction to the public. We will extend that to #ActualLivingScientistTeacher to highlight the role of teachers as scholars and scientists in their own right, leading their students in bold new ways!

Saturday 9:45 Baseload Balance

Length: 1 **Tyler Cvitkovic, Whit Pennington** **Thoroughbred 3**
Session 83 M H No Strand
Environmental Science

Participants will learn about the demand and distribution of electricity. Each participant will play a part in the process of electricity distribution. Key components of this activity will be learning about and understanding peak and demand time, generation sources, and distribution flow.

Saturday 9:45 Developing grade K-2 Classroom Embedded Assessments (CEA)

Length: 2 **Dr. Tom Tretter, Dr. Justin McFadden** **Thoroughbred 4**
Session 84 **Dr. Sheron Mark, Dr. Stephanie Phillip** Phenomena
P Biology / Life Science Environmental Science Physics

Presenters will share a structured, sequential process for developing strong, 3-dimensional (practices, crosscutting concepts, content) formative Classroom Embedded Assessments (CEA) for seamless use during classroom instruction. This will include a guided facilitation of the underlying thinking and decision-making that informs the process of CEA development. Resources helpful for this effort will be highlighted and shared, to show how specific resources can be helpful in particular ways. This process was informed by our work with approx. 100 teachers across the Commonwealth of Kentucky to develop CEAs. Examples of a few CEAs will be shared to illustrate the process.

Saturday 9:45 **Developing Middle School Classroom Embedded Assessments (CEA)**

Length: 2 **Dr. Tom Tretter, Dr. Justin McFadden** **Thoroughbred 1**
Session 85 **Dr. Sheron Mark, Dr. Stephanie Phillip** Phenomena
M Biology / Life Science Environmental Science Physics

Presenters will share a structured, sequential process for developing strong, 3-dimensional (practices, crosscutting concepts, content) formative Classroom Embedded Assessments (CEA) for seamless use during classroom instruction. This will include a guided facilitation of the underlying thinking and decision making that informs the process of CEA development. Resources helpful for this effort will be highlighted and shared to show how specific resources can be helpful in particular ways. This process was informed by our work with approx. 100 teachers across the Commonwealth of Kentucky to develop CEAs. Examples of a few CEAs will be shared to illustrate the process.

Saturday 9:45 **Engineering! It's a Process**

Length: 1 **Stephanie Lewis, Chip Davidson** **Thoroughbred 2**
Session 86 H No Strand
Engineering Design

Teachers will compete in an Engineering Challenge that they can take back and use in their classroom. During the hands-on presentation, teachers will participate in the same steps that engineers in the field use to complete projects in the workplace. Learn to Connect content through student engagement and exploration. Different sessions may have different engineering challenges. Come check us out!

Saturday 9:45 **Interactive Science Notebooks in Elementary and Middle School**

Length: 1 **Shawn Sizemore** **Scott-Woodford Room**
Session 87 E M Phenomena
Biology / Life Science Environmental Science Physics

This is a make and take session. You will be introduced to the interactive science notebook and understand its usefulness in both elementary and middle school settings. Participants will leave with a notebook they have designed and can begin incorporating into their classrooms.

Saturday 9:45 **KAS Aligned Units of Study Based on Environmental Education**

Length: 1 **Ashley Hoffman, Dr. Melinda Wilder, Brittany Wray** **Thoroughbred 7**
Session 88 P E M H Phenomena
Biology / Life Science Environmental Science Earth /

For the past year KAEE has been working with Dr. Melinda Wilder and facilitators to develop environmental education units of study that are fully aligned with the Kentucky Academic Standards for Science. Join us as we share how we've found environmental education to be invaluable for addressing phenomena, Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts.

Saturday 9:45 **Man vs. Wild: Lessons on the Earth and Human Impacts**

Length: 1 **Amy Lewis** **Thoroughbred 5**
Session 89 M Scientific Communication
Environmental Science

Human Impacts on Earth Systems is one of the Disciplinary Core Ideas of the state standards. In this hands-on session, the presenter will lead participants in small group problem solving, data analysis, online tools and discussions that cover human population and consumption trends, impacts on land use and natural resources, as well as possible paths toward sustainability.

Saturday 9:45 **NGSS on a Budget**

Length: 1 **Ruby Parker, Justin Magaw** **Thoroughbred 8**
Session 90 E M Phenomena
Engineering Design

Join Kentucky Science Center as we practice facilitating a phenomena based lesson on a budget. Learn how the Science Center applies these practices to all of their programs!

Saturday 9:45 **Obtaining and Evaluating Information**

Length: 1 **Diane Johnson, Patti Works, Candi Rumsey** **Regency 3**
Session 91 Scientific Communication
M H Biology / Life Science Environmental Science Physics

How confident are you in helping your students access complex texts? How well do your students evaluate the credibility of information? In this session, we will practice strategies for accessing complex texts and for evaluating the credibility of information from a variety of sources.

Saturday 9:45 **Science Assessment System: Through Course Tasks in Elementary**

Length: 1 **Christine Duke (KDE)** **Regency 2B**
Session 92 No Strand
P E Biology / Life Science Environmental Science Physics

TCT process is a collaborative process for calibrating and refining teaching and learning around rich tasks which are to be implemented at each grade level (K42). This session will provide specific details related to the ongoing development and refinement of the tasks, the 201748 timeline, and uses for the TCT component of the system as it relates to grade K5 formative assessment.

Saturday 9:45 **Science Bits: 5E Made Easy!**

Length: 1 **John Holt** **Thoroughbred 6**
Session 93 Phenomena
M H Environmental Science Physics Chemistry Earth / Space

Come see why Science Bits is the most awarded comprehensive curriculum in the world. Science Bits facilitates teaching that promotes deep understanding and instigates conceptual change necessary for learning science. We combine 5E lesson plans, constructivist pedagogy, and innovative multimedia tools to revolutionize science instruction.

Saturday 11:00 **Actual Living Scientist (Teachers!)**

Length: 1 **Dr. Amanda Glaze** **Thoroughbred 3**
Session 94 Phenomena
P E M H Biology / Life Science Environmental Science Physics

As science education grows to become more dynamic in nature and practice, so too must our conceptions of science teachers. A recent hashtag explosion on Twitter highlighted #ActualLivingScientists to point out that there are scientists everywhere and provide an introduction to the public. We will extend that to #ActualLivingScientistTeacher to highlight the role of teachers as scholars and scientists in their own right, leading their students in bold new ways!

Saturday 11:00 **Claim-Evidence-Reasoning: Writing Scientific Explanations**

Length: 1 **Pam O'Brien** **Scott-Woodford Room**
Session 95 Phenomena
E M H Physics Engineering Design

CER is a way for students to explain observed phenomena in a scientific way and how observations and data from an investigation are connected to science knowledge. This acclaimed and highly successful instructional strategy is changing how labs are conducted and making science investigations meaningful for students. ELD strategies will be shared and modeled for an equitable learning environment.

Saturday 11:00 **How Can a Teacher Cure the Whaa- Whaa- Whaa's?**

Length: 1 **Stephanie Lewis, Chip Davidson** **Thoroughbred 2**
Session 96 Scientific Communication
M H Biology / Life Science Environmental Science Physics

A session to help teachers manage PBL projects, discuss ideas to connect with community based partners, and brainstorm public share forums to create authentic, engaging learning experiences for science students.

Saturday 11:00

Leverage Social Media to Help Your Class

Length: 1

Patrick Goff

Jessamin-Franklin Room

Session 97

E M H

Scientific Communication
Biology / Life Science Environmental Science Physics

Learn how to use the power of social media (Twitter, Instagram, Facebook) to help grow your PLN and to bring outside resources and opportunities into your classroom.

Saturday 11:00

One and Done...Now Teaching is Fun!

Length: 1

David Frongillo

Thoroughbred 6

Session 98

E M H

No Strand
Environmental Science Physics Chemistry Earth / Space

20% of your students take up 80% of your time. Too often disruptive classroom behavior dominates that 80%. Just imagine, speaking to your troublesome student(s) just once, and it ends there. It can happen, and it does. Veteran or not, this is the session you need to attend.

Saturday 11:00

Science Assessment System: Through Course Tasks in Elementary

Length: 1

Christine Duke (KDE)

Regency 2B

Session 99

P E

No Strand
Biology / Life Science Environmental Science Physics

TCT process is a collaborative process for calibrating and refining teaching and learning around rich tasks which are to be implemented at each grade level (K12). This session will provide specific details related to the ongoing development and refinement of the tasks, the 201748 timeline, and uses for the TCT component of the system as it relates to grade K5 formative assessment.

Saturday 11:00

SEP's Made Easy

Length: 1

Roxane Dupris, Kathy Armstrong

Thoroughbred 8

Session 100

M

Reasoning From Evidence

Engineering Design

Experience research based investigations that include Science and Engineering Practices. Take away resources and strategies that will enrich your teaching.

Saturday 11:00

Splash Into Phenomena

Length: 1

Ella Bowling

Regency 3

Session 101

P E M

Phenomena
Biology / Life Science Environmental Science Physics

Are you ready to take your teaching of NGSS to the next level? By engaging students through exciting phenomena you can design lessons and units to ramp up your teaching and fully engage your students by piquing their natural curiosity! Participants will explore how to identify phenomena for their classroom, design instruction around phenomena, and take a look at sample lessons they can use in their classroom the very next day!

Saturday 11:00

The Zoo in 3D: A Comprehensive Science Experience

Length: 1

Kim Allgeier, JCPS teachers

Thoroughbred 7

Session 102

E

Phenomena

Biology / Life Science

In 2017, The Louisville Zoo introduced a series of new educational resources for elementary teachers and hosted 55 Kentucky teachers for a professional development; The Zoo in 3D. Aligned to the Science & Engineering Practices in the Next Generation Science Standards, The Zoo in 3D and its accompanying curriculum, blends school based and at Zoo lessons with the goal to support Kentucky teachers and highlight the ways the Zoo can be used as a scientific resource and educational partner.

Saturday 11:00 **Using Sound to Explore Scientific Phenomena**

Length: 1 **Dr. Wilson Gonzalez-Espada, Laura Parker** **Thoroughbred 5**
Session 103 **Adam Stockhausen** Reasoning From Evidence
M H Earth / Space Sciences

Join us and learn how blind students heard last August's solar eclipse. In addition, sound activities that make science accessible to ALL students will be shared. This session is a collaboration between Morehead State University, The Kentucky School for the Blind, the International Astronomical Union's Office of Astronomy for Development, and the Astronomy Demo Lab at Harvard University.

Saturday 12:30 **Graphing Calculators in the Middle School Classroom**

Length: 1 **Anita Laney, Hannah Laney** **Thoroughbred 2**
Session 104 M Phenomena
Physics Chemistry Engineering Design

Do you want to make gathering and interpreting data more enticing for your students? If so, come and be active participants in gathering data, entering the data into a graphing calculator, and analyzing the results. These activities are physical science based but these strategies could easily be adapted to other areas of science.

Saturday 12:30 **Engaging Students in Scientific Modeling**

Length: 1 **Stephanie Harmon, Candi Rumsey** **Regency 3**
Session 105 P E M H Scientific Communication
Biology / Life Science Environmental Science Physics

"Models serve the purpose of being a tool for thinking with making predictions and making sense of experience." (NRC Framework) Two classroom teachers will share their experiences with engaging students in the practice of scientific modeling.

Saturday 12:30 **Argument-Driven Inquiry in Middle and High School**

Length: 1 **Dr. Victor Sampson, Karin Johnson** **Regency 2B**
Session 106 M H Reasoning From Evidence
Physics Chemistry Earth / Space Sciences

This session is an introduction to a new approach to lab instruction called Argument-Driven Inquiry (ADI). ADI is an innovative instructional model that is based on current research about how people learn science and is designed to foster the development of science proficiency. This instructional approach gives students an opportunity to learn how to read, write, and speak in the context of science. In this session, participants will learn about the stages of the ADI instructional model.

Saturday 12:30 **Design and Build an Air Pollution Collector**

Length: 2 **Roberta Burnes** **Thoroughbred 7**
Session 107 E M No Strand
Environmental Science Earth / Space Sciences

How do we know what is in the air we breathe? Answering this question can be challenging because air is invisible and most pollutants are invisible too. In this session we'll learn about the science of air pollution monitoring, focusing on one of the most common pollutants: particulate matter. We'll explore the origins and health effects of this pollutant, then tackle the challenge of designing and constructing a particulate matter collector using simple materials.

Saturday 12:30 **Extending IQWST: Integrating Literacy Strategies**

Length: 1 **Diane Wright** **Jessamin-Franklin Room**
Session 108 M Phenomena
Earth / Space Sciences

Using IQWST Activities, this session is an opportunity to obtain strategies for integrating literacy strategies with readings, discussions, and using the Word Wall.

Saturday 12:30

Light: Activities and Demonstrations for Elementary and Middle

Length: 1

Leah Manley, Elizabeth Roland

Scott-Woodford Room

Session 109

Reasoning From Evidence

P E M

Physics

Activities and demonstrations to meet the NGSS standards for light in first, fourth, and middle grades. The NGSS standards to be addressed include: observations for illumination; investigations about light beams; design devices to communicate over a distance; evidence of light transfer; converting energy from one form to another; and others for elementary and middle levels.

Saturday 12:30

Making Energy with Mud

Length: 1

Linda Fuselier, Joshua Penrose, Aubrey Mojesky

Thoroughbred 5

Session 110

Phenomena

M

Biology / Life Science Environmental Science Engineering

We will introduce the use of microbial fuel cells (MFCs) to study the flow of energy in systems and map related activities onto three dimensions of NGSS. Participants will learn to construct their own MFC out of readily available materials and will observe electric current generation from mud. Yes, soil from your backyard. This is an excellent model for exploring energy flow through systems, engineering design principles and disciplinary core ideas related to photosynthesis and respiration.

Saturday 12:30

Reinventing/Reinvigorating Your Teaching

Length: 1

Catherina Wiley Sammons

Thoroughbred 3

Session 111

Phenomena

H

Biology / Life Science Chemistry

After over 20 years of teaching I decided to boldly adjust my teaching style. This session is a sharing of methods and resources I have used to readjust my teaching style to incorporate PBL, NGSS, TCT, data collection, technology apps and phenomena-based assessments.

Saturday 12:30

Science & Engineering Fairs: Ultimate Project based learning!

Length: 1

Garrett Scala

Thoroughbred 6

Session 112

Phenomena

E M H

Biology / Life Science Environmental Science Physics

Science Fairs are a perfect way to use project based learning while letting students focus on their own curiosities and interests. Students learn to use the scientific methods and engineering practices to investigate a topic that they care about. The session begins with an interactive monopoly style board game which introduces the processes and challenges of putting on a science fair.

Saturday 12:30

Science Assessment System: Through Course Tasks (6-12)

Length: 1

Mindy Curless (KDE), Rae McEntyre (KDE)

Thoroughbred 4

Session 113

No Strand

M H

Biology / Life Science Environmental Science Physics

TCT process is a collaborative process for calibrating and refining teaching and learning around rich tasks which are to be implemented at each grade level (K12). This session will provide specific details related to the ongoing development and refinement of the tasks, the 201718 timeline, and uses for the TCT component of the system as it relates to grade 6 through 12 formative assessment.

Saturday 12:30

Using Phenomena to Engage Students in Science

Length: 1

Desiree Sujoy, Aimee Tait

Thoroughbred 8

Session 114

Phenomena

P E M H

Environmental Science Physics Chemistry Earth / Space

What is Phenomena and what makes it engaging? By centering science education on phenomena that students are motivated to explain, the focus of learning shifts from learning about a topic to figuring out why or how something happens and connects that learning to the natural world. Explore examples of phenomena-based lessons as we share resources to get you started on building your own phenomena-based science lessons.

Saturday 1:45

Man vs. Wild: Lessons on the Earth and Human Impacts

Length: 1

Amy Lewis

Thoroughbred 5

Session 121

Scientific Communication

M

Environmental Science

Human Impacts on Earth Systems is one of the Disciplinary Core Ideas of the state standards. In this hands-on session, the presenter will lead participants in small group problem solving, data analysis, online tools and discussions that cover human population and consumption trends, impacts on land use and natural resources, as well as possible paths toward sustainability.

Saturday 1:45

The TCT Process & Professional Learning Resources

Length: 1

Christine Duke (KDE)

Thoroughbred 4

Session 122

No Strand

P E M H

Biology / Life Science Environmental Science Physics

This session will focus on the use of information from the TCT field test and resulting resources to support professional learning as Kentucky teachers continue to grow their understanding of the TCT component of the Science Assessment System. Emphasis will be on TCT Process as a tool for teacher teams to calibrate and refine strategies and expectations for student performance.

Saturday 3:00

Closing Session: Door Prizes!

Length: 1

KSTA Board

Thoroughbred 1

Session 123

No Strand

P E M H

Biology / Life Science Environmental Science Physics

Close out the 2017 conference with a bang by taking home one of the many door prizes that our exhibitors and others have donated.