Thursday 9:00 **Science Assessment System - What Administrators Need to Know**

Length: 6 **Karen Kidwell, Tom Tretter, Kim Zeidler-Watters,** **Thoroughbred 4**

Session 1 Three D Assessment

P E M H Biology / Life Science Environmental Science Physical

The new science assessment system will be field tested this year as it matures to full implementation next year. There are a number of characteristics of this assessment approach that are substantially different from existing approaches, with implications for both administrators and teachers. KSTA is a venue where many of these details will be widely shared. This session is designed for administrators (including school-level and district-level administrators, instructional coaches, and district specialists) to get an in-depth orientation to this important new assessment approach. Topics include an overview of the science assessment system with some concrete examples to offer a sense of how assessment will play out, as well as alignment with TPGES and exploration of how administrators may best structure and support teacher PLC teams in their schools. Administrators will hear about the plan for upcoming field testing of various parts of the assessment system.

Thursday 9:00 **Strategies for Implementing NGSS Practices**

Length: 6 **Patti Works, Diane Johnson, Tim Schneider** **Thoroughbred 1**

Session 2 Knowledge Enrichment

G Biology / Life Science Environmental Science Physical

Come kick off the conference with an overview of Kentucky's science assessment system, presented by KDE. Then, spend the day focusing on meaningful strategies to get students involved in using the Science and Engineering Practices as they uncover ideas and develop conceptual understanding. You will walk away from the day with a binder that will include engaging, effective strategies to help you develop student competencies and your own understanding of all eight practices. Come share your ideas, successes, and maybe even win a door prize as we travel along this NGSS implementation path.

Thursday 4:00 **Integrating Chromebooks or iPads and Vernier Technology**

Length: 2 **David Taylor** **Thoroughbred 3**

Session 3 Knowledge Enrichment

M H Biology / Life Science Physical Sciences

In this hands-on workshop you will use Chromebooks or iPads with various Vernier sensors to conduct experiments from our popular biology, chemistry, and physics lab books. See how collecting and analyzing data can help students learn critical science concepts that increase test scores and promote science inquiry. It is highly recommended that attendees bring their own Chromebook or iPad to the workshop.

Thursday 4:00 **The Science of Brewing and Distilling**

Length: 2 **Mark Phipps** **Exhibit Area**

Session 4 Knowledge Enrichment

G Biology / Life Science Physical Sciences

In this two hour presentation and tour, you will see the process of brewing and distilling and learn in depth about the science involved in the handling of yeast and other ingredients. You will visit the facilities of Alltech, Inc. which are located a short distance from Lexington Center and be hosted by Alltech's master distiller.

Thursday 6:00 **Elementary School 3-D Learning Make & Take**

Length: 2 **Janice Bullard, Carrie Holloway, Angela Green** **Thoroughbred 3**

Session 5 Knowledge Enrichment

P E Biology / Life Science Environmental Science Physical

Come join KSTA board members as we share activities that engage students in all three dimensions of NGSS. As a participant, you will be engaged in hands-on activities that explicitly connect to the Practices, Cross Cutting Concepts, and Disciplinary Core Ideas. The activities will be organized in stations; stations will be repeated every 30 minutes. Join us for the whole 2 hours or just 30 minutes!

Thursday **6:00** **High School 3-D Learning Make & Take**

Length: 2 **Laurie Babbs, Tina Marshall, Jessica Laswell** **Thoroughbred 4**

Session 6 Knowledge Enrichment

H Biology / Life Science Environmental Science Physical

Participants will experience a variety of educational experiences that integrate the science and engineering practices, disciplinary core ideas, and crosscutting concepts. Participants will leave with ideas easily adapted to their classroom.

Thursday **6:00** **Middle School 3-D Learning Make & Take**

Length: 2 **David Grossman, Brian McDowell, Patrick Goff** **Thoroughbred 2**

Session 7 Knowledge Enrichment

M Biology / Life Science Environmental Science Physical

Participants will experience a variety of educational experiences that integrate the science and engineering practices, disciplinary core ideas, and crosscutting concepts. Participants will leave with ideas easily adapted to their classroom.

Friday **8:30** **Through Course Tasks for Grades 3-5**

Length: 1 **Christine Duke** **Regency 1**

Session 8 Three D Assessment

E Biology / Life Science Environmental Science Physical

Through Course Task Facilitation will be a collaborative process for calibrating and refining teaching and learning around rich tasks, and will be implemented at each grade level (K-11). This session will provide specific details for the vision, timeline, and uses for the TCT component of the system as it relates to grade 3-5 as well as provide grade appropriate TCT models.
The field test for the TCT component of the system will occur November 2016 - March 2017. All Kentucky science teachers will facilitate a TCT during this timeframe.

Friday **8:30** **Classroom Embedded Assessment Overview**

Length: 1 **Rae McEntyre, Christine Duke, Mindy Curless,** **Thoroughbred 1**

Session 9 Three D Assessment

G Biology / Life Science Environmental Science Physical

Kentucky's coming Science Assessment System will consist of 3 components: Classroom Embedded Assessments (CEA), Through Course Tasks (TCT), and the State Summative Assessment (SSA). These 3 components will work together to provide different evidence of student attainment of the KY Academic Standards for Science, and thus, have different purposes within the system.
Classroom Embedded Assessment is the ongoing process that students and teachers use daily to inform “next best steps” for learning and instruction. This session will show how the CEA fits into the overall scheme of the science assessment system.

Friday **8:30** **It’s Shockingly Current: NGSS and Middle Grades Electricity**

Length: 1 **Leah Manley, Elizabeth Roland** **Thoroughbred 6**

Session 10 Knowledge Enrichment

M Physical Sciences

Sharing and participating in activities intentionally aligned to the disciplinary core ideas for middle school students in grades 6, 7, and 8. Targets created in collaboration with middle, and high school teachers as part of the deconstruction process will be shared with the instructional activities. The NGSS standards are MS-PS2-3 and MS PS 2-5. The Disciplinary Core Idea (DCI) codes are MS-PS3.C and MS-PS2B. The session will include demonstrations (e.g. using a Vann de Graff generator) and hands-on activities (e.g. making an electromagnet).

Friday **8:30** **Online Science Simulations from Explore Learning**

Length: 1 **Elizabeth Riggs, Joselyn Whetzel** **Jessamine-Franklin**

Session 11 Knowledge Enrichment

G Biology / Life Science Physical Sciences Earth / Space

Explore Learning Math and Science Gizmos offers over 400 experiences for students to graph, measure, compare, predict and prove. All aligned to the latest standards to help educators bring powerful new learning experiences to the classroom. Gizmos can help you turn your lessons into collaborative classroom discussions, cooperative learning experiences, and situations where students are scientists constructing arguments supported by evidence. Students won't just be acting like scientists, they will BE scientists!

Friday **8:30** **Pencil Box Science: 3-D Grade Level Progression Is In The Box!**

Length: 1 **Vivian Bowles, Sharon Thompson-Saito** **Thoroughbred 3**

Session 12 Engineering Design

P E Biology / Life Science Environmental Science Physical

Now more than ever, students' science success depends on the progression of science and engineering practices, disciplinary core ideas, and crosscutting concepts across grade bands. As you prepare for upcoming Through Course 3-D Science Tasks, are you asking: Why, when, and how am I to fit 3-D science into my already packed daily schedule? The Kentucky Education Association (KEA) Science Cadre's workshop has the answers in the box(es)! During this interactive session, you will participate in K-5 grade-level connected, standards-based pencil box science/engineering experiences, which you can adapt for your own students.

Friday **8:30** **Tech Slam**

Length: 1 **Carrie Holloway, Kyle Holloway** **Kentucky Room**

Session 13 Knowledge Enrichment

G Biology / Life Science Environmental Science Physical

A "tech slam" is a short, high energy tutorial demo of tech apps, skills, or ideas. Although slams involve introductions to different tools, the overriding principle is always the same: find out what you don't know and get to know it! So what can you share? Do you have a tech app that is a favorite with your students? One that you can't live without? Join us for this fast paced share-a-thon of all things tech around any science and engineering topic. This session is only as good as those who share, so audience participation is a must!

Friday **8:30** **The Secret to PBL Success**

Length: 1 **Michele Cozza** **Thoroughbred 2**

Session 14 Project Based Learning

G Biology / Life Science Environmental Science Physical

Project Based Learning is the process of involving students in an inquiry-based approach to solving an authentic, real-world problem. PBL is age appropriate, tied to the NGSS and science curriculum standards and allows students a voice and a choice in the way they select and develop the solution to the problem. Join us for this session where we will model hands-on, engaging, and interactive PBL and reveal the tips for succes that allow for seamless facilitation of this process in your STEM classroom.

Friday **8:30** **Unconference Sessions**

Length: 5 **KSTA Board** **Thoroughbred 8**

Session 15 Knowledge Enrichment

G Biology / Life Science Environmental Science Physical

Unconference sessions are created from attendees' interests and requests. This room will host a variety of small group discussions and sharing sessions.

Friday **8:30** **Airbags: Designing a Lab with Gas Laws**

Length: 2 **Del Ehemann** **Regency 3**

Session 16 Engineering Design

H Physical Sciences Engineering Design

This Laying the Foundation assessment is inquiry based and provides students with the opportunity to make independent choices as they design a simulated airbag using the ideal gas law and prior chemistry knowledge. Many NGSS items are incorporated in this lesson, such as the Science and Engineering Practices of Planning/ Carrying Out Investigations and Constructing Explanations and Designing Solutions. Finally, this lesson illustrates the rigor of Laying the Foundation lessons and instructional resources.

Friday **8:30** **Breakout EDU**

Length: 1 **Carly Baldwin, Brian McDowell** **Thoroughbred 4**

Session 17 Project Based Learning

G Biology / Life Science Environmental Science Physical

Breakout EDU uses the excitement of escape rooms and applies it to the classrooms. Games can be geared toward any age and any content. Participants will have to work together to solve the puzzles located in the room to open several different locks to “breakout”. Higher order thinking, communication, problem solving are all necessary skills to be successful.

Friday **8:30** **Craft Academy and Morehead State University**

Length: 1 **Carol Christian** **Thoroughbred 7**

Session 18 Knowledge Enrichment

M H Biology / Life Science Environmental Science Physical

Prepare your students for a 2 year scholarship at Morehead State University. High achieving students with an interest in a STEM career can apply for this full-ride residential scholarship. Attend this session to learn more.

Friday **8:30** **IQWST: Making Critical Thinking More Than Just a Cliché**

Length: 1 **Diane Wright, Cynthia Weller** **Scott-Woodford**

Session 19 Project Based Learning

M Biology / Life Science Environmental Science Physical

Come engage in a sequence of investigations where middle-school students experience phenomena, construct explanations, and argue from evidence. Teach students to think like a scientist as they apply a claim, evidence, reasoning framework to make sense of investigations.

Friday **9:45** **FLIP-EKY**

Length: 1 **Solomon Kilburn** **Thoroughbred 7**

Session 20 Knowledge Enrichment

G Biology / Life Science Physical Sciences Earth / Space

This session will be panel discussion about FLIPEKY. Teachers who have participated in the FLIPEKY grant will share their knowledge and activities that were completed during the program. In-class time is “re-purposed” for inquiry, application and assessment to better meet the needs of individual learners. Students study course material outside of class, using readings, pre-recorded video lectures or research assignments. During class time, instructors become facilitators of the learning process.

Friday **9:45** **Future City KY: Practical STEM in Middle and Elementary School**

Length: 1 **Joe Purcefull** **Kentucky Room**

Session 21 Project Based Learning

E M Biology / Life Science Environmental Science Physical

Future City is a national competition that addresses virtually all Next Generation Science Standards. Students in grades 6-8 (we also have a division for grades 4 and 5) compete against other students around the state for a trip to the national finals in Washington, DC. Along the way, they will learn about project planning, the engineer design process and city planning. Judged components include writing, technology, presentations and scale model building.

Friday **9:45** **How Our Grading System Has Enhanced NGSS**

Length: 1 **Nathan Lockhart, Kelly Sirginnis** **Thoroughbred 6**

Session 22 Knowledge Enrichment

G Biology / Life Science Physical Sciences Earth / Space

Our school made a move to standards based grading 4 years ago as a way to imbed and make the International Baccalaureate Program come alive in our classrooms. What we did not know is the impact it would have in helping make NGSS come alive for our students. Getting students to take risks, experiment, ask questions, and struggle with information and ideas while not affecting their grade has been amazing. Although we still hear the same questions about grades we are having new conversations and seeing more students care about growing and learning and not just about their grade.

Friday **9:45** **It's Electric: NGSS and Elementary Electricity**

Length: 1 **Elizabeth Roland, Leah Manley** **Thoroughbred 3**

Session 23 Knowledge Enrichment

E Physical Sciences

Sharing and participating in activities intentionally aligned to the disciplinary core ideas for elementary students in grades 3 and 4. Targets created in collaboration with elementary, middle, and high school teachers as part of the deconstruction process will be shared with the instructional activities. The NGSS standards are 3-PS2-3, 4- PS3-2, and 4-PS3-4. The Disciplinary Core Ideas (DCI) codes are: PS2.B, PS3.A, PS3.B, and ETS1.A.

Friday **9:45** **Kinetic Energy-Exploring EnergyWorks**

Length: 1 **Sue Parrent, Tyler Cvitkovic** **Thoroughbred 5**

Session 24 Knowledge Enrichment

P E M Physical Sciences

Participants will explore The NEED Project's EnergyWorks kit to see how these activities support kinetic energy standards. Hands-on activities designed for thermal energy-heat, radiant energy-light, sound, and motion. The EnergyWorks kit is designed for Elementary and Middle School students to learn forms of energy. Activities are designed for multiple grade levels.

Friday **9:45** **Classroom Embedded Assessments in Middle School**

Length: 1 **Tom Tretter** **Thoroughbred 1**

Session 25 Three D Assessment

M Biology / Life Science Environmental Science Physical

The new science assessment system will be field tested this year as it matures to full implementation next year. There are a number of characteristics of this assessment system approach that are substantially different from existing approaches. One key part of this assessment system is rich, well-designed, 3-dimensional (practices, crosscutting concepts, content) classroom-embedded formative assessments – a structured process for making informed decisions about next instructional steps. This session will share details of that overall assessment system and implications for middle school science teachers.

Friday **9:45** **No Excuses Chemistry! Redesigning Chemistry for the 21st Century**

Length: 1 **Georgina Anderson** **Jessamine-Franklin**

Session 26 Project Based Learning

H Physical Sciences

After a year of teaching Chemistry in a high-poverty, rural high school, I identified several key challenges that stood between my students and a high-level understanding in Chemistry. These challenges include high absenteeism, low engagement, unequal access to technology, low parental support and a pervasive view of science as irrelevant to students' futures. These are issues that challenge and frustrate most of us! In response, I have completely restructured my classroom, attempting to address these challenges. A combination of a semi-flipped classroom, project based learning, groups that function as income-earning companies and incentivized ACT practice are key components.

Friday **9:45** **You've Used a FA Probe: What's Next?**

Length: 2 **Diane Johnson, Patti Works, Tim Schneider** **Thoroughbred 4**

Session 27 Three D Assessment

G Biology / Life Science Environmental Science Physical

Perhaps you've used the FA Probes developed by Page Keeley in her Uncovering Students Ideas series but have wondered, what's next? Join us for this interactive session and practice a variety of strategies for determining and taking key next steps to progress student understanding. Strategies, handouts and door prizes!

Friday **9:45** **POGIL: Process Oriented Guided Inquiry Learning**

Length: 2 **Debbie Brock** **Thoroughbred 2**

Session 28 Knowledge Enrichment

H C Biology / Life Science Physical Sciences

POGIL is an acronym for Process Oriented Guided Inquiry Learning. It is a student-centered strategy where students work in small groups with individual roles to ensure that all students are fully engaged in the learning process. POGIL activities focus on core concepts and encourage a deep understanding of the course material while developing higher-order thinking skills. In this session, participants will complete a POGIL activity in Biology or Chemistry and later learn how to implement an activity in their own classroom.

Friday **9:45** **STEM-gineering**

Length: 1 **Kathleen Schutter** **Scott-Woodford**

Session 29 Engineering Design

E Engineering Design

In this workshop sponsored by Delta Education you will experience research-based investigations that naturally lead to engineering. Next Generation science standards are clearly marked to make teaching the first priority. Receive workshop materials, readers, online resources and strategies that you can use in your classroom tomorrow.

Friday **9:45** **Understanding the Upcoming Summative Science Assessment**

Length: 1 **Sean Elkins, Taylor Sullivan** **Regency 1**

Session 30 Three D Assessment

P E M H Biology / Life Science Environmental Science Physical

This session will describe the structure and development process used to create the upcoming Kentucky summative science assessment (SSA) field test. The session will emphasize the relationship of the SSA to the other components of the total science assessment system and will include reflections on the item development process from a teacher member of the writing team.

Friday **11:00** **Urban Environmental Education**

Length: 1 **Tim Darst, Tom Tretter** **Thoroughbred 5**

Session 31 Knowledge Enrichment

E M H Environmental Science

Urban Environmental Education is a growing field of study that aims to encourage environmental education in urban settings. Students, through urban environmental education, learn how human activities can have positive and negative impacts on the air, water, and soil that is necessary for a healthy ecosystem and those that live in it. This session will include descriptions of urban environmental education resources available to teachers in the Louisville region. Participants in this session will also experience specific, 3-dimensional, phenomena-oriented middle school lessons demonstrating how teachers can explicitly incorporate environmental resources into their science teaching. The example lessons are intended to equip teachers and environmental educators to collaboratively explore explicit 3-dimensional teaching in easily-accessible environmental settings such as an urban school campus or neighborhood.

Friday **11:00** **The Role of Through Course Tasks in Ky's Assessment System**

Length: 1 **Mindy Curless** **Thoroughbred 1**

Session 32 Three D Assessment

P E M H Biology / Life Science Environmental Science Physical

entucky's coming Science Assessment System will consist of 3 components: Classroom Embedded Assessments (CEA), Through Course Tasks (TCT), and the State Summative Assessment (SSA). These 3 components will work together to provide different evidence of student attainment of the KY Academic Standards for Science, and thus, have different purposes within the system. Through Course Task Facilitation will be a collaborative process for calibrating and refining teaching and learning around rich tasks, and will be implemented at each grade level (K-11). This session will provide specific details for the vision, timeline, and uses for the TCT component of the system.

Friday **11:00** **Craft Academy and Morehead State University**

Length: 1 **Carol Christian** **Kentucky Room**

Session 33 College & Career Readiness

M H Biology / Life Science Environmental Science Physical

Prepare your students for a 2 year scholarship at Morehead State University. High achieving students with an interest in a STEM career can apply for this full-ride, residential scholarship. Attend this session to learn more.

Friday **11:00** **Grant Writing & Resource Development**

Length: 1 **Solomon Kilburn** **Thoroughbred 7**

Session 34 Knowledge Enrichment

G Biology / Life Science Physical Sciences Earth / Space

This session will be introduction to grant writing and resource development. Information for available science grant funding will be provided. The participants will be given opportunity for Q & A. The presenter will be available to assist participants with developing a grant for their organization for submission. In order for your organization to meet the Kentucky & National Science Standards, you will need funding. Grant writing is the key to achieve success by providing more funding for your organization.

Friday **11:00** **Integrating Literacy and Science – the Wow factor**

Length: 1 **Diane Wright, Cynthia Weller** **Jessamine-Franklin**

Session 35 Project Based Learning

P E Biology / Life Science Environmental Science Physical

Come engage in a hands on investigation where your students explore, read, write, talk and think critically about science. Address reading, writing and math through science investigations. Create data tables, argue from evidence, they have a reason to write that's not just "fill in the blank".

Friday **11:00** **Pollinators Gone Wild! A 5E Investigation**

Length: 1 **Ella Bowling** **Thoroughbred 3**

Session 36 Knowledge Enrichment

M Biology / Life Science

Come fly into the world of pollinators and their role in plant reproduction with a hands-on 5E lesson to guide you through gathering evidence to support and develop a scientific explanation of how pollinators enable more successful plant reproduction. Handouts and CD of resources will be provided to all.

Friday **11:00** **Using the Lesson Study Protocol to Integrate Science Literacy**

Length: 1 **Donita Brock, Brittany Cox** **Scott-Woodford**

Session 37 College & Career Readiness

H Biology / Life Science

The Lesson Plan Study is a practice in which educators take an in-depth look at a piece of essential content. Through planning, observation, data analysis, and revision a study team designs and implements a learning experience that is beneficial for all students. The unique collaboration of content teachers, academic program consultants, and principals brings out key features of student learning that may otherwise escape notice.

Friday **11:00** **Building Assessments for Earth Science Using Models & Argumentation**

Length: 1 **Stephanie Harmon** **Thoroughbred 6**

Session 38 Three D Assessment

H Physical Sciences Earth / Space Sciences

How do we help our students become 3-dimensional learners? A high school teacher will share a variety of experiences and resources focused on using the practices of modeling and argumentation as a way of fostering 3D thinking.

Friday **11:00** **Minty Engineering with Mint-Mobiles!**

Length: 1 **Wilson Gonzalez-Espada** **Regency 3**

Session 39 Engineering Design

E M Physical Sciences Engineering Design

Participants will practice the steps of the engineering design process by brainstorming, planning, building, testing, and improving their "Mint-Mobiles", racing cars made with simple materials and that get their name from the Lifesaver mints used as wheels. The designs will be tested as a way to explore independent, dependent and control variables.

Friday **12:00** **Lunch Break - Exhibit Area Spotlight**

Length: 0 **KSTA** **Exhibit Area**

Session 40 Knowledge Enrichment

G Biology / Life Science Environmental Science Physical

Be sure to visit the Exhibits Area during this break time.

Friday **12:45** **General Session: Keynote Address, KSTA Award Presentations**

Length: 2 **Dr. Michelle LaRue** **Thoroughbred 1**

Session 41 Knowledge Enrichment

G Biology / Life Science Environmental Science Earth /

Dr. Michelle LaRue is a research ecologist at the University of Minnesota. She uses interdisciplinary tools, such as GIS and high-resolution satellite imagery, to study spatial and population dynamics of penguins, seals, cougars, and polar bears - species facing substantial conservation challenges as both the physical and social environments change across the world. She is also a science communicator and believe that making science accessible through appoachability as a speaker is key to public engagement and science comprehension.

Friday **2:15** **Pearson Interactive Science**

Length: 1 **Katie MacDonald** **Thoroughbred 5**

Session 42 Knowledge Enrichment

P E M Biology / Life Science Environmental Science Physical

Interactive Science is a complete science curriculum for Grades K-8 students. Lessons incorporate all aspects of the Kentucky Science Standards including Disciplinary Core Ideas (DCI), Crosscutting Concepts (CCC), and Science and
Engineering Practices (SEP). Interdisciplinary STEM activities and projects are included in every chapter. Target literacy skills as you teach science. Lessons develop science vocabulary and reading comprehension. The Write-in Student Edition includes daily critical thinking and writing activities. Blended print and digital experiences engage students.

Friday **2:15** **Developing Three-Dimensional Tasks**

Length: 2 **Amy Lewis, Kelly Miller** **Thoroughbred 4**

Session 43 Three D Assessment

E M Biology / Life Science Environmental Science Physical

Unmasking the foundations of NGSS can be confusing and complex. In this session, we will break down the Crosscutting Concepts, Disciplinary Core Ideas, and Science and Engineering Practices in order for you to have a deeper understanding of how to implement these foundations into your 3-D assessments and tasks. During the second half of the session, samples will be provided and you will be afforded time to construct the assessments an tasks to take back and use in your classroom.

Friday **2:15** **Learn About the NSTA Learning Center**

Length: 1 **Denny Casey** **Regency 3**

Session 44 Knowledge Enrichment

G Biology / Life Science Environmental Science Physical

Join over 192,000 science teaching professionals. Learn today, your way. In the NSTA Learning Center you have access to thousands of free professional development resources designed to enhance your content and pedagogical knowledge. We also encourage you to join other educators in asynchronous discussion in the community forums, to review and rate resources in your library, make and share collections, and upload your own resources. See all the activities that earn you points and badges!

Friday **2:15** **Using Satelitte Imagery to Engage Students in Research**

Length: 1 **Michelle LaRue** **Thoroughbred 1**

Session 45 Project Based Learning

M Environmental Science Earth / Space Sciences

Come learn about a new and interesting way to get your students involved in ongoing data collection process. Dr. LaRue will show you how to use satellite imagery to help count Weddell Seals in Antarctica. These counts will help scientists track and better understand seal behavior. Bring a laptop or tablet that is wifi enabled to this session.

Friday **2:15** **Curriculum for a Crowded World**

Length: 1 **Pattie Stivender** **Scott-Woodford**

Session 46 Knowledge Enrichment

M Environmental Science

In this interdisciplinary, hands-on workshop, participants will engage in inquiry-based activities that help students understand the concepts of carrying capacity, "ecological footprints" and sustainability in nature. Current data on population and resource consumption trends, climate change and land use patterns will be shared and discussed. Participants will engage in several hands-on activities including concept-mapping, cooperative group problem solving, graphing and analysis, role-playing simulations and resource-allocation games.

Friday **2:15** **ACT Science: Teaching Strategies & Building Capacity**

Length: 2 **Amanda Ratliff** **Jessamine-Franklin**

Session 47 College & Career Readiness

H Biology / Life Science Environmental Science Physical

Participants will learn strategies to enhance their instruction and student performance on the science portion of the ACT. Strategies will specifically focus on helping all students achieve the national benchmark of 23 as well as making students with higher scores break additional score barriers.

Friday **2:15** **B.R.I.C.K.S. - Building Responsible, Innovative, Creative, Kids**

Length: 2 **Tracy Morris, JoEllen Wilhoite** **Thoroughbred 6**

Session 48 Project Based Learning

P E Biology / Life Science Environmental Science Physical

B.R.I.C.K.S. is a holistic approach to child development combining Safety Safari and Bricks 4 Kidz® programs. Safety Safari is a kid-friendly, comprehensive safety resource. Captivating and interactive, it gauges each child's understanding of every safety tip. Safety education plays a vital role in the lives of children. Bricks 4 Kidz® is a hands-on educational program designed to teach children STEM fundamentals utilizing LEGO® Bricks.

Friday **2:15** **Breakout EDU Chemistry Focus**

Length: 1 **Debbie Brock, Sheryl Fischer** **Kentucky Room**

Session 49 Knowledge Enrichment

H Physical Sciences

Have you heard of the Breakout Rooms that are all the rage? Applied to the classroom, students build critical thinking, problem-solving, and collaboration skills to solve a series of problems related to chemistry content. Attendees will participate in a Breakout series of activities in the field of atomic structure, and then will learn about the process of developing and setting up their own Breakout lessons.

Friday **2:15** **Choosing Instructionally Productive Phenomena to Drive Student Learning**

Length: 2 **Tricia Shelton** **Thoroughbred 3**

Session 50 Three D Assessment

P E M H Biology / Life Science Environmental Science Physical

This session focuses on the questions “What are phenomena and how are they used to drive instruction to meet the Kentucky Science Standards?”. This activity will serve 3 purposes: help participants identify what phenomena are/are not, help participants build a list of criteria to help select phenomena that are productive and help participants determine how selecting phenomena will guide their work in instruction and assessment.

Friday **2:15** **NGSS Essential: Developing a Growth Mindset Learning Culture**

Length: 2 **Tim Schneider, Patti Works, Diane Johnson** **Regency 1**

Session 51 Knowledge Enrichment

G Biology / Life Science Environmental Science Physical

Establishing a learning culture that allows students to take risks, learn from mistakes, and harnesses the power of “yet,” is essential for successful implementation of the KAS for Science. In this session, you will learn a range of strategies for fostering a growth mindset with your students. We’ll have ready-to-use masters, an extensive resource list, and door prizes!

Friday **2:15** **The Value of Writing Scientific Explanations in STEM**

Length: 1 **Michele Cozza** **Thoroughbred 7**

Session 52 Three D Assessment

G Biology / Life Science Physical Sciences Earth / Space

Claim-Evidence-Reasoning is a way for students to explain, in a scientific way, how their observations and data from an investigation are connected to science knowledge. Join us as we learn how this acclaimed and highly successful instructional strategy is changing the way that lab conclusions are written and finally making science investigations meaningful for students.

Friday **2:15** **Claims, Evidence, and Reasoning with Earthworm Inquiry**

Length: 1 **Reeda Hart** **Thoroughbred 2**

Session 53 Three D Assessment

P E Environmental Science

In this active workshop, explore qualitative and quantitative observations of earthworm models to scaffold claims, evidence, and reasoning. Achieve multiple NGSS Performance Expectations! Free CD! “Wriggle” in and out of the three dimensions of NGSS as you make your way through performance expectations at each grade level using earthworms.

Friday **3:30** **Alltech in the Classroom**

Length: 1 **Miranda Woodall, Alltech** **Thoroughbred 7**

Session 54 Knowledge Enrichment

G Biology / Life Science Environmental Science

Please join Alltech's Education Outreach Specialist, Miranda Woodall, as she shares material and ideas for your classroom. We want to show you how Alltech can be a resource for students of all ages. We believe it is never too early to begin to kindle natural interest in science, where food comes from and more.

Friday **3:30** **Kinesthetic Chemistry: Get Your Students Up & Moving!**

Length: 1 **Catherine Zavacki** **Scott-Woodford**

Session 55 Knowledge Enrichment

H Physical Sciences

Movement makes learning more robust, increases memory and keeps all students actively engaged. We will demonstrate, and involve you, in multiple activities incorporating topics such as density of gases, stoichiometry, bonding, types of reactions, intermolecular forces and more. These activities will have the students develop and use models in alignment with the Next Generation Science Standards. Let's get them out of their seats!

Friday **3:30** **Breakout EDU Biology Focus**

Length: 1 **Sheryl Fischer, Debbie Brock** **Kentucky Room**

Session 56 Knowledge Enrichment

H Biology / Life Science Environmental Science

Have you heard of the Breakout Rooms that are all the rage? Applied to the classroom, students build critical thinking, problem-solving, and collaboration skills to solve a series of problems related to biology content. Attendees will participate in an Ecology Breakout series of activities to save the “mahpop” bird, and then will learn about the process of developing and setting up their own Breakout lessons.

Friday **3:30** **Classroom Embedded Assessments for Elementary**

Length: 1 **Tom Tretter** **Thoroughbred 1**

Session 57 Three D Assessment

P E Biology / Life Science Environmental Science Physical

The new science assessment system will be field tested this year as it matures to full implementation next year. There are a number of characteristics of this assessment system approach that are substantially different from existing approaches. One key part of this assessment system is rich, well-designed, 3-dimensional (practices, crosscutting concepts, content) classroom-embedded formative assessments – a structured process for making informed decisions about next instructional steps. This session will share details of that overall assessment system and implications for elementary classroom teachers.

Friday **3:30** **Engineering Practices and Chemistry**

Length: 1 **Viola Randall** **Thoroughbred 2**

Session 58 Engineering Design

M H Physical Sciences Engineering Design

Use engineering design to teach chemistry concepts. We will explore basic engineering design and rewrite a common high school chemistry concept and lab to incorporate elements of engineering.

Friday **3:30** **Bringing Kentucky Science Center to You**

Length: 1 **Rachel Beck, Mira Gentry Johnson** **Thoroughbred 5**

Session 59 Project Based Learning

G Biology / Life Science Environmental Science Physical

Are you grappling with the engineering practices of the NGSS? Or trying to fit problem-based learning into your already busy school day? This session, suitable for teachers grades K-12, explores a variety of hands on experiences that let students ask questions, define problems, gather and analyze data, and create and defend their conclusions. Interactive examples of programming from both its successful on-site field trip experiences and its full menu of offsite and distance learning programs that ‘bring the Science Center to you’ will illustrate creative and effective techniques you can use in your classroom.

Friday **3:30** **Engineering Made Easy**

Length: 1 **Kathleen Schutter** **Regency 3**

Session 60 Engineering Design

M Engineering Design

Experience research-based investigations for Middle School that include science and engineering practices. Leave with strategies, workshop materials and online resources that you can use tomorrow.

Saturday **8:30** **Minty Engineering with Mint-Mobiles!**

Length: 1 **Wilson Gonzalez-Espada** **Scott-Woodford**

Session 61 Engineering Design

E M Physical Sciences Engineering Design

Participants will practice the steps of the engineering design process by brainstorming, planning, building, testing, and improving their "Mint-Mobiles", racing cars made with simple materials and that get their name from the Lifesaver mints used as wheels. The designs will be tested as a way to explore independent, dependent and control variables.

Saturday **8:30** **Personalized Learning: It's NOT Rocket Science**

Length: 1 **Amanda Cox** **Thoroughbred 3**

Session 62 College & Career Readiness

E M Biology / Life Science Environmental Science Physical

Want to leverage your classroom technology to transform teaching and learning? Come let us take you on our journey on
how we have created a self-paced environment to personalize learning for every child in our science classes. Through the
use of teacher-created instructional video lessons and Google Classroom students can now move through YOUR curriculum at their own pace.

Saturday **8:30** **Understanding the Upcoming Summative Science Assessmentg**

Length: 1 **Sean Elkins, Taylor Sullivan** **Thoroughbred 1**

Session 63 Three D Assessment

G Biology / Life Science Environmental Science Physical

This session will describe the structure and development process used to create the upcoming Kentucky summative science assessment (SSA) field test. The session will emphasize the relationship of the SSA to the other components of the total science assessment system and will include reflections on the item development process from a teacher member of the writing team.

Saturday **8:30** **Using Google Earth Pro For Mapping Field-Collected Data**

Length: 1 **Demetrio Zourarakis** **Thoroughbred 7**

Session 64 Knowledge Enrichment

H Physical Sciences Earth / Space Sciences

This presentation starts out with the assumption that Google Earth Pro remains the ‘natural’ software (DATA and PROGRAM) platform and environment for use in NGSS HS-ESS1, 2 and 3, in conjunction with data from project-based learning activities that are collected in the field. GE allows for visualization of terrain, land cover, and changes brought about by human activities and natural disturbances. Students can collect data with various devices and data can be brought into GE for contextualization and analysis. The presentation will also exemplify the use of GE and other open source resources to help address some Science and Engineering Practices (SEP), Disciplinary Core Ideas (DCI) and cross-cutting concepts (CCC).

Saturday **8:30** **Project SAAS: Project-Based Science Environments in Middle School**

Length: 2 **Merryn Cole, Jennifer Wilhelm** **Jessamine-Franklin**

Session 65 Project Based Learning

M Biology / Life Science Environmental Science Physical

Join us for an overview of Project SAAS, a two-year long series of professional development workshops where middle school mathematics and science teachers have the opportunity to experience, implement, and design their own project-based units. The second part of the session will highlight the STEM Education graduate program at the University of Kentucky.

Saturday **8:30** **Integrating Literacy and Science – the Wow factor**

Length: 1 **Diane Wright, Cynthia Weller** **Thoroughbred 6**

Session 66 Project Based Learning

P E Biology / Life Science Environmental Science Physical

In this session presented by Activate Learning participants will engage in a hands-on investigation where students explore, read, write, talk and think critically about science. Address reading, writing and math through science investigations. Create data tables, argue from evidence, they have a reason to write that’s not just “fill in the blank”.

Saturday **8:30** **Energy Activities for School and Family Nights**

Length: 1 **Sue Parent, Tyler Cvitkovic** **Kentucky Room**

Session 67 Knowledge Enrichment

P E M Physical Sciences

Participants will be introduced to energy related activities that can be incorporated into school events and family nights. These activities are hands-on and incorporate science, language arts, social studies, and visual arts and can be used during school or evening events with parents. All activities highlight energy related content that supports science and other disciplinary standards.

Saturday **8:30** **Gathering Engineering Resources Before You Croak!**

Length: 1 **Reeda Hart, Ella Bowling, Amber Carter** **Thoroughbred 2**

Session 68 Engineering Design

E M Biology / Life Science Environmental Science

What resources are available to help you teach engineering? How can you tell when you have found a quality engineering lesson? In this active session, you will study the invasive cane toad from Australia and look closely at technology, evaluating solutions to a problem, and implementing your own design. Bring your own STEM websites to share with others and we will combine them for participants.

Saturday **8:30** **The Role of the Through Course Tasks in KY's Science Assessment System**

Length: 1 **Mindy Curless** **Thoroughbred 4**

Session 69 Three D Assessment

P E M H Biology / Life Science Environmental Science Physical

Kentucky's coming Science Assessment System will consist of 3 components: Classroom Embedded Assessments (CEA), Through Course Tasks (TCT), and the State Summative Assessment (SSA). These 3 components will work together to provide different evidence of student attainment of the KY Academic Standards for Science, and thus, have different purposes within the system. Through Course Task Facilitation will be a collaborative process for calibrating and refining teaching and learning around rich tasks, and will be implemented at each grade level (K-11). This session will provide specific details for the vision, timeline, and uses for the TCT component of the system.

Saturday **8:30** **Unconference Sessions**

Length: 4 **Lisa Devillez** **Thoroughbred 8**

Session 70 Knowledge Enrichment

G Biology / Life Science Environmental Science Physical

"Unconference" sessions are created from attendees' interests and requests. This room will host a variety of small group discussions and sharing sessions. Keep an eye on Twitter and the sign board outside of this room for updates on what's happening and when.

Saturday **9:45** **Developing Three-Dimensional Tasks**

Length: 2 **Amy Lewis, Kelly Miller** **Thoroughbred 4**

Session 71 Three D Assessment

E M Biology / Life Science Environmental Science Physical

Unmasking the foundations of NGSS can be confusing and complex. In this session, we will break down the Crosscutting Concepts, Disciplinary Core Ideas, and Science and Engineering Practices in order for you to have a deeper understanding of how to implement these foundations into your 3-D assessments and tasks. During the second half of the session, samples will be provided and you will be afforded time to construct the assessments an tasks to take back and use in your classroom. The presenters will be on hand during this time to guide and assist you in the process.

Saturday **9:45** **Through Course Tasks for Grades 3-5**

Length: 1 **Christine Duke** **Scott-Woodford**

Session 72 Three D Assessment

E Biology / Life Science Environmental Science Physical

Through Course Task Facilitation will be a collaborative process for calibrating and refining teaching and learning around rich tasks, and will be implemented at each grade level (K-11). This session will provide specific details for the vision, timeline, and uses for the TCT component of the system as it relates to grades 3-5 as well as provide grade appropriate TCT models. The field test for the TCT component of the system will occur November 2016 - March 2017. All Kentucky science teachers will facilitate a TCT during this timeframe.

Saturday **9:45** **B.R.I.C.K.S. - Building Responsible, Innovative, Creative, Kids**

Length: 2 **Tracy Morris, JoEllen Wilhoite** **Thoroughbred 2**

Session 73 Project Based Learning

P E Biology / Life Science Environmental Science Physical

B.R.I.C.K.S. is a holistic approach to child development combining Safety Safari and Bricks 4 Kidz® programs. Safety Safari is a kid-friendly, comprehensive safety resource. Captivating and interactive, it gauges each child's understanding of every safety tip. Safety education plays a vital role in the lives of children. Bricks 4 Kidz® is a hands-on educational program designed to teach children STEM fundamentals utilizing LEGO® Bricks.

Saturday **9:45** **Developing Phenomenon-Based Lessons & Standards-Aligned Units**

Length: 2 **Tricia Shelton** **Thoroughbred 3**

Session 74 Three D Assessment

E M H C Biology / Life Science

This session focuses on how 3 dimensional units build science ideas with coherence that provides purpose and meaning in learning. Focusing on instructionally productive phenomena will enable participants to understand how phenomena are directly connected to the disciplinary core ideas and crosscutting concepts and motivate the need to engage in the practices of the Kentucky Science Standards. Through immersion and examination of actual student work, participants will explore how student ideas develop over time and how to support an evolving understanding in the classroom.

Saturday **9:45** **Energy Is Elementary: The Center for Applied Energy Research**

Length: 1 **Eduardo Santillan-Jimenez** **Thoroughbred 5**

Session 75 Knowledge Enrichment

E M Physical Sciences

For several years, researchers at the University of Kentucky Center for Applied Energy Research have partnered with science teachers in Fayette County to develop and deploy – using a Scientists in the Classroom approach – a number of hands-on modules designed to increase energy literacy while reinforcing the teaching of the Kentucky Science Standards.

Saturday **9:45** **Engineering Design Challenges for the STEM Classroom**

Length: 1 **Michele Cozza** **Thoroughbred 7**

Session 76 Engineering Design

G Engineering Design

The E in STEM provides the path to innovation and integration through the Engineering Design Process. Engineering design challenges bring authentic, real-world applications of science and math concepts to life in your classroom as well as embedding 21st century skills of collaboration, innovation and persistence. Join us for this interactive, engaging, and hands-on session where the EDP is investigated, collaboration and consensus are challenged, and facilitation techniques are modeled for STEM success and student achievement.

Saturday 9:45 **Classroom Embedded Assessments for High School**

Length: 1 **Tom Tretter** **Thoroughbred 1**

Session 77 Three D Assessment

H Biology / Life Science Environmental Science Physical

The new science assessment system will be field tested this year as it matures to full implementation next year. There are a number of characteristics of this assessment system approach that are substantially different from existing approaches. One key part of this assessment system is rich, well-designed, 3-dimensional (practices, crosscutting concepts, content) classroom-embedded formative assessments – a structured process for making informed decisions about next instructional steps. This session will share details of that overall assessment system and implications for high school science teachers.

Saturday 9:45 **Moving Water Can Do Work**

Length: 1 **Sue Parrent, Tyler Cvitkovic** **Kentucky Room**

Session 78 Knowledge Enrichment

E M Physical Sciences

Participants will explore how the force of water can do work to make things like electricity. This session will be a hands-on activity where participants will test their design to see how water can do work. This session will support standards in physical science for energy of motion.

Saturday 9:45 **Using the Lesson Study Protocol to Integrate Science Literacy**

Length: 1 **Donita Brock, Brittany Cox** **Thoroughbred 6**

Session 79 College & Career Readiness

H Biology / Life Science

The Lesson Plan Study is a practice in which educators take an in-depth look at a piece of essential content. Through planning, observation, data analysis, and revision a study team designs and implements a learning experience that is beneficial for all students. The unique collaboration of content teachers, academic program consultants, and principals brings out key features of student learning that may otherwise escape notice. This opportunity to slow down and focus on the details has allowed science specialists to weave in key strands of science literacy and overcome classroom learning barriers that have proven problematic in the past.

Saturday 11:00 **Classroom Embedded Assessment Overview**

Length: 1 **Rae McEntyre** **Scott-Woodford**

Session 80 Three D Assessment

G Biology / Life Science Environmental Science Physical

Classroom Embedded Assessment is the ongoing process that students and teachers use daily to inform “next best steps” for learning and instruction. This session will show how the CEA fits into the overall scheme of the science assessment system.

Saturday 11:00 **Through Course Task for Primary Grades**

Length: 1 **Christine Duke** **Thoroughbred 1**

Session 81 Three D Assessment

P Biology / Life Science Environmental Science Physical

Through Course Task Facilitation will be a collaborative process for calibrating and refining teaching and learning around rich tasks, and will be implemented at each grade level (K-11). This session will provide specific details for the vision, timeline, and uses for the TCT component of the system as it relates to grades K-2 as well as provide grade appropriate TCT models. The field test for the TCT component of the system will occur November 2016 - March 2017. All Kentucky science teachers will facilitate a TCT during this timeframe.

Saturday **11:00** **Wind Turbine Design Project Middle and High School**

Length: 1 **Laura Willis** **Thoroughbred 6**

Session 82 Project Based Learning

M H Environmental Science Physical Sciences Earth / Space

In this session, the presenter will walk you through the process of planning, designing and implementation Wind Turbine Blade Design engineering project for your students. During this session you will be provided with handouts, rubrics, and student samples where students are required to research, design, create blades, and present their designs. One wind turbine will be given away at the end of the session.

Saturday **11:00** **Bringing Kentucky Science Center to You**

Length: 1 **Rachel Beck, Mira Gentry Johnson** **Thoroughbred 5**

Session 83 Project Based Learning

G Biology / Life Science Environmental Science Physical

Are you grappling with the engineering practices of the NGSS? Or trying to fit problem-based learning into your already busy school day? This session, suitable for teachers grades K-12, explores a variety of hands on experiences that let students ask questions, define problems, gather and analyze data, and create and defend their conclusions. Interactive examples of programming from both its successful on-site field trip experiences and its full menu of offsite and distance learning programs that 'bring the Science Center to you' will illustrate creative and effective techniques you can use in your classroom.

Saturday **11:00** **FLIP-EKY**

Length: 1 **Solomon Kilburn** **Thoroughbred 7**

Session 84 Knowledge Enrichment

G Biology / Life Science Physical Sciences Earth / Space

This session will be panel discussion about FLIPEKY. The panel will include teachers that have participated in the FLIPEKY grant. The teachers will share their knowledge about FLIPEKY activities that were completed during the program. Flipping the classroom is a "pedagogy-first" approach to teaching. In this approach in-class time is "re-purposed" for inquiry, application and assessment in order to better meet the needs of the individual learners. Students gain control of the learning process through studying course material outside of class, using readings, pre-recorded video lectures (using technology such as Panopto), or research assignments. During class time, instructors become facilitators of the learning process by helping students work through problems individually and in groups.

Saturday **11:00** **IQWST: Making Critical Thinking More Than Just a Cliché**

Length: 1 **Diane Wright, Cynthia Weller** **Jessamine-Franklin**

Session 85 Project Based Learning

M Biology / Life Science Environmental Science Physical

Come engage in a sequence of investigations where middle-school students experience phenomena, construct explanations, and argue from evidence. Teach students to think like a scientist as they apply a claim, evidence, reasoning framework to make sense of investigations.

Saturday **11:00** **It's Electric: NGSS and Elementary Electricity**

Length: 1 **Elizabeth Roland, Leah Manley** **Kentucky Room**

Session 86 Knowledge Enrichment

E Physical Sciences

Sharing and participating in activities intentionally aligned to the disciplinary core ideas for elementary students in grades 3 and 4. Targets created in collaboration with elementary, middle, and high school teachers as part of the deconstruction process will be shared with the instructional activities. The NGSS standards are 3-PS2-3, 4- PS3-2, and 4-PS3-4. The Disciplinary Core Ideas (DCI) codes are: PS2.B, PS3.A, PS3.B, and ETS1.A.

Saturday **1:45** **Engineering Energy Efficient Homes**

Length: 1 **Gabriel Draper** **Thoroughbred 6**

Session 87 Engineering Design

E Physical Sciences Engineering Design

This session highlights the importance of energy efficient buildings and utilizes an active learning activity to engage participants in the experience. It highlights that using our energy efficiently is an additional way to reduce our carbon footprints and increase our quality of life. Conserving energy for structures and homes is something that people experience almost every day, although we sometimes skip over the details. Participants will work in small teams to explore how effective different materials are as insulators by running an experiment, collecting their own data, and discussing the results.

Saturday **1:45** **Next Gen. Instructional Design: Natural Hazards Unit**

Length: 1 **Patrick Goff, Emily Northcutt** **Thoroughbred 7**

Session 88 Project Based Learning

M Environmental Science Earth / Space Sciences

As part of our work with the Next Generation Instructional Design Team, we developed a new NGSS-aligned unit focused on Natural Hazards for middle school science. Come and learn how we developed the unit, what went into it, the content it covers, and how it uses a 3-dimensional approach to assess student learning.

Saturday **1:45** **Through Course Tasks for High School**

Length: 1 **Rae McEntyre** **Scott-Woodford**

Session 89 Three D Assessment

H Biology / Life Science Environmental Science Physical

Through Course Task Facilitation will be a collaborative process for calibrating and refining teaching and learning around rich tasks, and will be implemented at each grade level (K-11). This session will provide specific details for the vision, timeline, and uses for the TCT component of the system as it relates to high school as well as provide grade appropriate TCT models. The field test for the TCT component of the system will occur November 2016 - March 2017. All Kentucky science teachers will facilitate a TCT during this timeframe.

Saturday **1:45** **Through Course Tasks for Middle School**

Length: 1 **Melinda Curless** **Thoroughbred 4**

Session 90 Three D Assessment

M Biology / Life Science Environmental Science Physical

Through Course Task Facilitation will be a collaborative process for calibrating and refining teaching and learning around rich tasks, and will be implemented at each grade level (K-11). This session will provide specific details for the vision, timeline, and uses for the TCT component of the system as it relates to middle school as well as provide grade appropriate TCT models.
The field test for the TCT component of the system will occur November 2016 - March 2017. All Kentucky science teachers will facilitate a TCT during this timeframe.

Saturday **1:45** **Partnering With Parents**

Length: 1 **Tricia Shelton, Jessica Holman** **Kentucky Room**

Session 91 College & Career Readiness

G Biology / Life Science Environmental Science Physical

Learn how to support student achievement by developing partnerships with parents and help parents understand the importance of the Next Generation Science Standards and the role they play in education in a 21st Century technology-driven and globally connected world. Participants will learn specific ways to message and help parents understand the importance of the standards for college, career and life readiness; and how parents can support classroom learning.

Saturday 1:45 **No Excuses Chemistry! Redesigning Chemistry for the 21st Century**

Length: 1 **Georgina Anderson** **Thoroughbred 3**

Session 92 Project Based Learning

H Physical Sciences

After a year of teaching Chemistry in a high-poverty, rural high school, I identified several key challenges that stood between my students and a high-level understanding in Chemistry. These challenges include high absenteeism, low engagement, unequal access to technology, low parental support and a pervasive view of science as irrelevant to students' futures. These are issues that challenge and frustrate most of us! In response, I have completely restructured my classroom, attempting to address these challenges. A combination of a semi-flipped classroom, project based learning, groups that function as income-earning companies and incentivized ACT practice are key components.

Saturday 1:45 **Teaching with Trout: Using Fish to Enhance Education**

Length: 1 **Parker Owen, Natalie Butcher, Melanie Trowel** **Thoroughbred 2**

Session 93 Project Based Learning

E M H Biology / Life Science Environmental Science Engineering

Trout in the Classroom allows students at any grade to experience a unique opportunity to see past the four walls of their classroom. By teaming up with Trout Unlimited, you can literally bring your science standards to life. Give your students the ultimate project based learning as they help hatch trout eggs and raise the baby trout from newborns to fingerlings. Throughout the course of the year, your students will get real hands-on exposure to biology, ecology, environmental science and engineering design.

Saturday 1:45 **Future City KY: Practical STEM in Middle and Elementary School**

Length: 1 **Joe Purcefull** **Thoroughbred 5**

Session 94 Project Based Learning

E M Biology / Life Science Environmental Science Physical

Future City is a national competition that addresses virtually all Next Generation Science Standards. Students in grades 6-8 (we also have a division for grades 4 and 5) compete against other students around the state for a trip to the national finals in Washington, DC. Along the way, they will learn about project planning, the engineer design process and city planning. Judged components include writing, technology, presentations and scale model building. Future City is a program that will challenge your students as they broaden their knowledge of all STEM fields. Come learn how your students can get started!

Saturday 1:45 **Pencil Box Science: 3-D Grade Level Progression Is In The Box!**

Length: 1 **Vivian Bowles, Sharon Thompson-Saito** **Jessamine-Franklin**

Session 95 Engineering Design

P E Biology / Life Science Environmental Science Physical

Now more than ever, students' science success depends on the progression of science and engineering practices, disciplinary core ideas, and crosscutting concepts across grade bands. As you prepare for upcoming Through Course 3-D Science Tasks, are you asking: Why, when, and how am I to fit 3-D science into my already packed daily schedule? The Kentucky Education Association (KEA) Science Cadre's workshop has the answers in the box(es)! During this interactive session, you will participate in K-5 grade-level connected, standards-based pencil box science/engineering experiences, which you can adapt for your own students.

Saturday 3:00 **Closing Session - Door Prize Auction**

Length: 1 **KSTA Board** **Thoroughbred 1**

Session 96 Knowledge Enrichment

G Biology / Life Science Environmental Science Physical

Bring your "KSTA Bucks" and enter for chances to win the free giveaways donated by our exhibitors. Just place you bucks into the bags next to the items that you would like to win. the number of bucks you put into the bag will influence your chance of winning. Good Luck!