

Presentation Briefs: March 2nd, 2018

10:20 – 11:10AM Concurrent Workshop Sessions

Energy Carnival

Presented By: Kimberly Stalker and Melissa Szentmiklosi

Grade Level: M

Get ready for a ride of a lifetime as you learn how creativity can get learners excited and engaged by infusing energy standard based stations with carnival attractions, where the final goal is creating an "Energetic" attraction!

Flexible Conductors in High School Physics

Presented By: Chad Hobby

Grade Level: M, H

In Physics and Physical Science students and teacher discuss resistance in detail. In particular students are expected to know the relationship between resistance, length, cross sectional area, and conductivity.

This change in resistance can be very dramatic for CNT sensors and they stretch a noticeable amount unlike their metal counterparts. So they are ideal for students to —play with as they can manually stretch it and measure the change with a multi-meter.

In this educational application CNT sensors are actually preferable. As they are not readily available, carbon-black impregnated rubber is a viable and inexpensive substitute.

Mentorship-Based Leadership: Creating a Collaborative Classroom Environment

Presented By: Desi Rotenberg

Grade Level: H

This presentation focuses on the role of the teacher as a facilitator within the classroom, and on the integration of peer-mentorship and collaboration on a daily basis. Through project and task based learning, students work together in teams and learn the value of communication, collaboration, teamwork, and leadership. Additionally, students are mentored on how to handle conflict within a group setting and how to cultivate problem solving and critical thinking skills to move forward productively and efficiently. Students utilize peer evaluations, self-reflections, and team building to learn the necessary skills they will need to be an effective leader and team player once they enter the workforce.

Increase Your Lab Confidence

Presented By: Laura Schendel

Grade Level: E

Do you wish you had a better idea of how to plan and manage science lab activities in your classroom? Are you feeling overwhelmed at the thought of organizing and leading lab activities and guiding students through the analysis of the data they collected? Come join Laura Schendel as she models a hands- on lab and shares tips necessary for a successful lab from planning, to implementation and post lab analysis.

STEM is FUNdamental

Presented By: Danae Perry

Grade Level: E

Children engineer informally all the time; they are fascinated with building things, and with taking things apart to see how they work. By encouraging these explorations in elementary school, we can keep these interests alive. Participants will be introduced to Engineering Adventures (EA), a free curriculum available for download developed by the Museum of Science, Boston. Working in small groups, participants will engage in an engineering design challenge from the learner's perspective. Participants will reflect on their experience as teachers and discuss how to utilize the EA curriculum with their own students!

Micro:bit Madness

Presented By: Nicole Spain

Grade Level: E, M

Think programming with a hands on tool is too expensive think again. BBC is revolutionizing programming education in Britain with a Microbit for under 20 a kit. I will be presenting how to easily use this tool with multiple types of devices. I will be sharing how I used this tool with my 6th grade students to partner write their own children's book that they illustrated using the programmable LED lights. Also how my students used the programmable buttons and sensors to create their own board games. This STEM tool can be used in any curriculum to motivate students.

Virtual Field Trips in the Classroom with Google Expeditions

Presented By: Amy Trujillo

Grade Level: E, M, H

Join us on a virtual field trip with Google Expeditions. Learn how to take guided expeditions, or virtual field trips, in any subject at any grade level. Participants are encouraged to download Google Expeditions before the session so they can join the expedition right away. One lucky participant will take home a new Google Cardboard. All participants will leave with examples on how to implement Google Expeditions in their classroom as well as how to set up Google Expeditions.

More than your average Engineering Design Challenge- Science and Math in Motion!

Presented By: Letizia Branz and Jennifer Borges

Grade Level: M, H

Come join us for an exciting session where we investigate the importance of Science and Math in Engineering through a STEM activity that can be accommodated to meet several different middle and high school Science and Mathematics classrooms.

11:20-12:10 Concurrent Workshop Sessions

Learning Math and Physics Through Interactive Graphing

Presented By: Jim Ebbert

Grade Level: H

Participants will learn how to use WinPlot to help students build a visual and conceptual understanding of Mathematics and Physics. WinPlot is a free, advanced software package for graphing functions and relations. It provides for the use of parameters and animations. WinPlot can be used to explore mathematics or for modeling in Physics. It allows students to construct their own understanding of "big ideas" through exploration and discovery. WinPlot is also a great tool for teachers to use for producing graphs and projecting animations.

Orion Parachute System - Focus on the M in STEM

Presented By: Laura Bamberger

Grade Level: M

Participants will construct an Orion Space Capsule; design, create, and test different parachute systems for the capsule; then test the parachutes to identify which parachute system produces the slowest decent rate while maintaining capsule integrity. Extensions of the activity, including construction and testing of heat shields, land vs. water landings, use of technology, and differentiation of the parachute construction to allow teachers to best meet individual student needs will also be discussed.

So, you think you can't code? A look into IOT

Presented By: Lauren Bracken

Grade Level: M

In this hands-on activity, walk through the process of sensor creation and computer programming to inspire your middle school students to try computer science. This workshop walks through an approachable lesson plan for the novice teacher who wants to bring some computer science into his classroom.

NASA Apps for the Classroom

Presented By: Dr. Lester Morales and Kristina Brink

Grade Level: E, M, H

NASA has over 50 FREE Apps for educational use. Educators will learn how to use and integrate some of the applications functionality in the classroom setting. Virtual reality, 3-D exploration, and NASA missions come alive with the use of these apps. Earth Science, Solar System, Robotics, International Space Station Research, engaging students through the usage of technology apps as "only NASA can."

Hydroponics in a Jug: “Lettuce” Excel

Presented By: Mary Lynn Hess and Rudy White

Grade Level: E

Explore an innovative, affordable and effective approach to engage learners through gardening. The presenters will introduce real-world experiences that support the Standards for Mathematical Practice and the Science and Engineering Practices. Adapted from university proven hydroponics methods, this hands-on student workshop and lecture will emphasize critical thinking, problem solving, collaboration, and communication in the transdisciplinary context of STEM. It is practical for teachers and administrators, inexpensive, challenging, and fun!

Integrated STEM Learning

Presented By: Jennifer MacDonald and Heather Vickers

Grade Level: E

Learn successful strategies for creating and implementing standards-based, integrated STEM units in a curriculum progression for grades K-5. These innovative units integrate ELA, math, and science state standards while providing real-world engineering design problems for students to solve in collaborative groups. See how we incorporated technology and the arts to help students make connections and deepen the learning. Specific examples of units with lesson plans and student samples will be shared and get hands-on experience with one of our engineering challenges. Discover how engaging students with an innovative, integrated curriculum made the difference in the dramatic turnaround in our school.

Doing STEM is Not Adding to Your Plate!

Presented By: Amy Monahan

Grade Level: E, M, H

This workshop will present a hands on project to show how STEM meshes with core curriculum and how to implement STEM in any classroom.

1:20 – 2:10 Concurrent Workshop Sessions

Engineering for Elementary Life Science

Presented By: Michelle Roberts and Denise Touchberry

Grade Level: E

Teachers will get a hands-on experience at an Engineering Design Challenge relating to Elementary Life Science standards, and learn about other EDCs for life science they can easily apply in their classrooms.

Logic Gates and Operators – Truth Tables and Maps – Binary Numbers

Presented By: Jim Ebbert

Grade Level: H

Computer Science students need an understanding of logic gates and binary numbers to better understand the inner workings of computers. This understanding will also help them be more competitive in the emerging area of Field Programmable Gate Arrays (FPGAs). Participants will be given an opportunity to explore these topics from the standpoint of their students and will be given access to free printable materials they can use in their classrooms.

Hardcore STEM for Hardcore Teachers

Presented By: Chris DeRosier and Sharron DeRosier

Grade Level: M

Interested what STEM looks like in middle school? Don't like the teaching to the test learning environment? Want to be creative again? Come see how a few hardcore teachers have pushed the envelope and created a school within a school. 300 Title I middle school ESE, Gen. Ed. and Gifted STEM Academy students do 30+ labs, crocheting, engineering, film making, robot building, plant growing, bug breeding craziness, and many more. Mini-labs will be setup to demonstrate how students are learning on their own (using Canvas Learning Management System) with little teacher oversight (compared to a regular classroom setting, no fingers have been lost in our labs).

Sound Energy Synergy

Presented By: Alicia Foy, PJ Duncan, Jen Infinger

Grade Level: E, M

Sound energy transfer will be explored through the arts using basic materials to build a musical instrument, explain how it produces sound, compose a simple 4/4 composition, and brainstorm how this knowledge is applicable to jobs and careers now and in the future.

Weathering STEM and Literacy

Presented By: Linda Roche and Pam Colton

Grade Level: E

Work smarter not harder. Integrate STEM across the curriculum in the primary classroom (K-2) through a unit on weather. In this session participants will explore weather while reading, writing and using hands-on lessons that support math, technology and science standards. Participants will walk away with lesson plans ready to use in their classrooms.

Can you Breakout.edu with Google?

Presented By: Missy Jones

Grade Level: E

Breakout is the classroom version of Escape Games. By using Google apps for education and science standards you will work with a team and "breakout".

Teaching Physics Through Drone technology

Presented By: Gustavo Junco and Merylyn Johnson

Grade Level: M, H

Drones are used in agriculture, firefighting, real estate, forestry. The list goes on. What about education? In this workshop, Gustavo Junco will run participants through an engaging and creative use of drones to teach concepts of middle school physical science and high school physics.

Citizen Science & the Environment

Presented By: Laura Schendel

Grade Level: M, H

Citizen Science is a great way to engage students in real world science activities. Join ECO as we build a prototype picture post platform which you can take back to your classroom. You will participate in the lesson and get use your cell phones to collect photos that can help scientists all over the world to witness the effects of climate change on a global basis. After the session (or at the end of lunch), we will walk over to the arboretum and install a permanent wooden Picture Post on the UCF campus. We will take photos and upload them to our picture post web location.

2:20 – 3:10 Concurrent Workshop Sessions

Coding and Computational Thinking in the Elementary Classroom

Presented By: Tracy Miller, Alyson Hooker, Andrew Silbaugh, Glenda Montgomery

Grade Level: E

Come and learn how coding can be incorporated in the elementary classroom. We will discuss the various tools we use to build skills and increase computational thinking in our young students. You will have the chance to use many of the products we use in our classrooms.

Exposing Students to Wireless Sensor Networks in the Middle School Classroom

Presented By: Jazmine Williams

Grade Level: M

Gather an understanding of how wireless sensors can drive your instruction by keeping your students engaged, increasing the rigor of the lesson, and allowing the better use of instructional time.

Success STEMs from Great Lesson Planning

Presented By: Erica Sutula and Gabriela McConnell

Grade Level: E, M, H

Engage with content area experts while learning how to create your very own STEM lessons. Receive a lesson plan template specific to STEM content that focuses on linking standards to support student learning and engagement within the context STEM. Leave this session with a sample lesson for either elementary or secondary that can be used for times when the curriculum calls for Design Challenges or STEM days.

Extending Standards with STEM activities

Presented By: Rachel Knight

Grade Level: E

No time for STEM? Too many standards to cover? Come and get some practical, low cost STEM activities that can be used in the classroom to help reinforce the standards, as well as keep students interest level high. This session will give you a chance to see some hands on activities that are easy to incorporate. Attendees will get cross-curricular lesson plans, articles, technology ideas and additional STEM ideas.

Linear Regression and Correlation for Environmental Sensor Calibration

Presented By: Jared Herretes

Grade Level: H

This lesson plan focuses on the usage of environmental sensors and how linear regression and correlation skills can be used to calibrate and predict the concentration of contaminants in real world scenarios.

Increasing Interest in STEM Careers with Engineering Designs

Presented By: Katherine Grady

Grade Level: M

Katherine Grady's session will review and demonstrate the implementation of technology and engineering design in the middle school setting. Using a single board microprocessor, like Arduino, to solve problems in the middle school science classroom setting may be a catalyst to improving interest in STEM careers. This session will demonstrate and share results from an applied RET lesson. Katherine Grady will share an engineering design inquiry based RET lesson for all attendees to offer students an opportunity to design and problem solve like a 21st century STEM worker.

Enduring Effect of Project Based Learning

Presented By: Abdul Siddiqui

Grade Level: M, H

The presentation and robotics hands on experience will highlight the benefits of Project Based Learning. The observations that are captured in the presentation are based on the High School Engineering Internship and Robotics Teams the US Army PEO STRI has supported. The High School Internship is intended to be a practical approach for mentoring high school students in developing and incorporating processes needed for accomplishing successful technical projects.

The Robotics Teams mentoring is the best process for implementing the lessons for successful project development and management in a competitive environment.