

## **FEEC Presentation Briefs: March 6<sup>th</sup>, 2020**

### **10:20 – 11:10AM Concurrent Workshop Sessions**

#### **A STEAM Exploration of Tiny Homes for the Homeless**

Presented By: Daniel Edelen & Dr. Sarah Bush

Grade Level: Elementary

In this session, we will explore a STEAM inquiry designed to engage upper elementary students in the creation of tiny homes as solution to homelessness. Participants will engage in an authentic STEAM inquiry that was implemented in a fourth-grade classroom. A major focus will be on planning for students to learn through authentic opportunities and real-world mathematics and science. (Math Focused)

#### **Robotics and NASA: Bringing Robots and Coding into the Classroom**

Presented By: Dr. Samuel Garcia

Grade Level: Elementary and Middle

In today's classrooms, robotics and coding have quickly emerged as tools to enhance the educational experiences of youth and help boost student engagement and achievement. At NASA, engineers and scientists develop and execute a wide variety of robotic missions to achieve specific scientific goals. In this interactive session, participants will be introduced to various groundbreaking NASA robotic missions, engage in a coding challenge using Sphero robots, and learn about NASA based resources designed to stimulate student interest in STEM learning and careers. (Engineering Focused)

#### **Engineer a Bird Feeder: STEM Inquiry and Problem Based Learning**

Presented By: Mary Lynn Hess

Grade Level: Elementary

Bring the excitement of hands-on engineering to your elementary classroom! This interactive experience will emphasize critical thinking, problem solving, collaboration and communication in the transdisciplinary context of STEM through a real-world experience. Brainstorm, predict, construct, analyze and discuss your model idea for keeping squirrels from eating food from a bird feeder. (Engineering Focused)

#### **Plugging In to Computer Science Professional Development**

Presented By: Emily Beth Langley

Grade Level: Elementary, Middle, High

Orlando Science Center is proud to be one of Code.org's Regional Partner organizations. Their computer science curriculum can be implemented with students of all ages and grade levels. The AP Computer Science Principles curriculum has been pre-approved by the College Board Course Audit. In this session, we will explore these K-12 courses and experience an engaging, "unplugged" activity that can be adapted to suit various grade levels. No prior coding experience necessary. (Technology Focused)

### **Harnessing the Energy of Waves: Visible light Spectrum**

Presented By: Humberto Rodriguez & Nilsa Hernandez

Grade Level: Middle, High

The following presentation aims to use the 5 E instructional model to investigate monochromatic and polychromatic properties of visible light. Specifically, participants will be able to explore the differences between white light and laser light when deflected by a prism, measuring the circumference of the light at different distances and reflection at different angles. (Science Focused)

### **ECOPOLY**

Presented By: Ron Sandrin-Litt

Grade Level: High

In this session, teachers will be introduced to ECOPOLY, a fun classroom game that emphasizes research and Environmental Science. This exciting game covers all topics covered in the Florida Environmental Science curriculum. Attendees will receive a printed copy of the game board to use in their own classes. (Science Focused)

### **Help Girls Change the World with STEM**

Presented By: Carol Unterreiner & Luci Coker

Grade Level: Elementary, Middle, High

Girls want to make the world a better place and we need to convince them that stem can help them do just that. This session will share how we are successfully recruiting and retaining girls into stem, and how these girls are continuing in stem courses/fields as they grow older. (Engineering Focused)

## **12:20-1:10PM Concurrent Workshop Sessions**

### **NASA Commercial Crew Program**

Presented By: Dr. Samuel Garcia

Grade Level: Elementary, Middle, High

NASA's CCP is working with Boeing and SpaceX to design, develop, and test systems to send astronauts to the Space Station. In this session participants will learn about NASA's CCP and explore a toolkit comprised of resources for K-12 educators that includes engineering challenges, coding, digital badging, virtual reality, and more. (Engineering Focused)

### **Podcasting: When You Want Them to Talk**

Presented By: Erin Kiger

Grade Level: Elementary, Middle, High

Podcasting can be a fantastic way to give students' a voice in their learning! In this session, you will explore podcasting tools that can be used for the classroom. We will also talk about how to use podcasting for students in the classroom, including but not limited to as a form of formative assessment, for a parent newsletter, and/or for book talks. By the end of the session, each attendee will have created a podcast for their class and have a plan in place for how to provide students the opportunity to use it to enhance their learning. (Technology focused)

### **Ecological Indicators- Ask the Bugs**

Presented By: Laura Schendel

Grade Level: Elementary and Middle

Come and identify live macroinvertebrates collected in the field on the UCF campus. Guidance and resources will be shared to conduct field investigations in your local community. Engage students in a hands-on simulation and game from Project WET. Teachers will conduct a simulated assessment of the health of a stream using readily available materials. Lesson plans provided. (Science Focused)

### **"Building" Up Our Student Artists**

Presented By: Kathryn Senkarik & Jennifer Jones

Grade Level: Elementary

This session will focus on 3 units that will detail ways teachers can use visual and performance art to teach STEM concepts. Attendees will have the opportunity to explore materials for themselves, ask questions about Art integration, and receive lesson plans they can take back to their own educational setting. This session is intended for elementary teachers. (Engineering Focused)

### **Let's put Math and Science into Motion!**

Presented By: Beth Smith

Grade Level: Middle and High

Learn how easy it is to code on your graphing calculator to drive the TI Innovator™ Rover. Explore multiple representations of position, velocity and time by writing code to navigate challenges. Make connections between slope, rate of change, speed and velocity. Help students develop a solid understanding of distance and time graphs. No coding experience necessary. (Math Focused)

### **Kindergarten Unplugged**

Presented By: Colleen Strickland, Courtney Moreland, & Hannah Gomez

Grade Level: Elementary

Join us to learn how to get kids coding! After spending the session fully immersed in the learning opportunities, teachers will leave with lesson plans, materials, and supplies to implement back in the classroom! Lessons include introduction of key vocabulary, practice with concrete models of coding, and programming lessons leading up to video gaming with Code.org. Get hands on experience with our technology petting zoo- Coding Critters, Botley, KIBO and many more! All lesson plans and activities are aligned to ELA, Math and Computer Science standards. (Technology Focused)

### **Custom Jewelry Made by Electroplating Copper onto a Chemically Masked Alloy**

Presented By: Dr. Matthew Traum

Grade Level: Middle and High

Create custom-designed jewelry while simultaneously exploring four practical materials science process applications: 1) electroplating, 2) metal alloys, 3) corrosion resistance, & 4) chemical masking. Participants build CuSO<sub>4</sub> electroplating baths with copper anodes, using them to explore predictions about four electroplating processes. Participants apply knowledge obtained from experiments to custom design necklaces made by masking brass washers in patterns with Sharpie marker; electroplating copper onto the brass washers; and removing the Sharpie with rubbing alcohol to reveal the untouched brass underneath. Participants complete their necklaces by threading clasps through the brass washers so they can wear and showcase their multi-colored creations. (Science Focused)

### **1:20-2:10PM Concurrent Workshop Sessions**

#### **Connecting Proportional Relationships, Rate of Change, Slope, and Volume Using Water Displacement and a Little ELA!**

Presented By: Laura Bamberger

Grade Level: Middle and High

This hands-on workshop will help students connect proportional thinking topics of rate of change, constant rate of change, and slope to a water displacement lab and volume measurement using one of Aesop's fables as a springboard to ignite student interest. Participants will work through the lab and look at online activities that help students master these concepts! (Math Focused)

#### **Cyber Security – The Dangers Everyone Should Be Aware Of**

Presented By: Keith Coker

Grade Level: Elementary, Middle, High

Participants will learn how to protect themselves and their students through this workshop. Cyber security discussion items to include: What is the Dark Web, Password Best Practices, Dangers of Public Wi-Fi, Advanced Email Phishing Vulnerabilities, Identity Theft and Fraud Prevention, Internet of Things (IoT) Dangers, Latest Hacker Tools, Mobile Device Threats (Technology Focused)

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### **Energy can be Elementary**

Presented By: Rachel Knight

Grade Level: Elementary

This session will give attendees ideas and take-home lesson plans on how to incorporate STEM activities across the curriculum easily in the classroom which will help students identify some basic forms of energy such as light, heat, sound, electrical, and mechanical. Attendees will get ideas on how to make Energy an easy topic to teach in their classroom and an extension of what the students are learning! (Engineering Focused)

### **Engineering Design Process with Imagineering and 3D Design**

Presented By: Nicole Spain

Grade Level: Middle and High

Use free resources like Khan Academy and Tinkercad to teach students to use the engineering design process. Though Khan academy Disney Imagineers teach students how to use theme and setting to design their theme park lands including hands on tools like a ride simulator. Then let students' creativity shine by designing their own theme park in 3D using TinkerCads new classes feature. (Engineering Focused)

### **Reviewing Standards with Gimkit**

Presented By: Amy Trujillo

Grade Level: Elementary, Middle, High

It's that time of year again! Test prep time! Why bore the students and yourself when you can create engaging and interactive review sessions of the standards? Learn how to use data to create review sessions with Gimkit, an online quiz resource. Bring your phone or mobile device to the session and be ready to compete on Gimkit for prizes! (Technology Focused)

## **2:20-3:10PM Concurrent Workshop Sessions**

### **Engaging Youth in STEM**

Presented By: Wendy Austin and Joyce Walters

Grade Level: Elementary, Middle, High

Participants will explore the FIRST core values of Discovery, Innovation, Impact, Inclusion, Teamwork, and FUN! We will be using LEGO elements to learn about Coopertition® between participants and opportunities to learn about the FIRST programs we have to offer from Pre-K to 12 by the implementation of FIRST programs both within the classroom and as after school extracurricular opportunities for your students. (Technology Focused)

### **SLAM: Science Leadership and Mentoring**

Presented By: Dr. Anne Bubriski, Danielle Dickey, and Mariah Fermin

Grade Level: Middle

SLAM is a mentoring program pairing one college woman student with a 7th grade girl. SLAM promotes girls' inspiration and excitement in STEM fields and careers while also building their leadership abilities. (Science Focused)

### **How to Guide Student Discourse to Inspire a Zeal for STEM Careers**

Presented By: Sarah Porcenaluk and Jared Porcenaluk

Grade Level: Elementary and Middle

At an early age, we can encourage and inspire students to build on their innate curiosity, which can have a direct effect on their interest in STEM. By focusing mathematics classroom culture on the importance of problem solving rather than procedural methods, students can become more prepared for innovating in the 21st century. To show how this works in practice, Sarah Porcenaluk, M.Ed., and Jared Porcenaluk, Senior Software Developer, will walk through both the theory and application of how in-classroom discourse can prepare students for real-world conversations in STEM careers. (Math Focused)

### **The Science of Toys**

Presented By: Lynda Roche and Jennefer Simmons

Grade Level: Elementary

Children are naturally curious about how things work and without a doubt love to play. In this session participants will take a hands-on look at toy inventions by analyzing their design for safety and enjoyment. They will keep a toy journal to record their findings and analyze results. This information will guide them in inventing a new toy or improving upon an existing one. (Engineering Focused)

### **Enduring Effect of Project Based Learning**

Presented By: Abdul Siddiqui

Grade Level: Middle and High

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. (Engineering Focused)