

## **Presentation Briefs: April 22<sup>nd</sup>, 2016**

### **10:45 AM - 11:35 AM Concurrent Sessions:**

#### **From Robots to Hurricanes: Using the Engineering Design Process in Elementary School**

Presented By: JoAnn Archer and Lynda Roche

Grade Level: E

Incorporating engineering design projects in the elementary classroom can be challenging due to time, content, and resource constraints. In this session, participants will learn to manage these constraints while solving a real world problem using a flexible format that guides them through the Ask, Imagine, Plan, Create and Improve stages of the Engineering Design Process. Participants will leave the session with a lesson plan, a finished project, and tips for applying the lesson in their classroom as well as across grade levels.

#### **Mad Science: Making Science Edu-taining!**

Presented By: Kylie Koscoe

Grade Level: E

Mad Science is on a mission to spark the imagination of children everywhere with exciting, live, and interactive programs that instill a clear understanding of what science is really about, and how it affects the world around us. Our Mad Scientist will show you how to make Science fun and hands-on for your students, using easy to find materials and everyday Science concepts. Learn more at [CFL.MadScience.org](http://CFL.MadScience.org)

#### **Do U Know what is made in Your Backyard? FREE Educational Resources, All Made in Florida**

Presented By: Danielly Orozco-Cole

Grade Level: M, H

FLATE's online free Ed. resources are intended to help educators and students to increase awareness and interests in STEM related careers. It features STEM centered, industry-connected resources for K-12 school educators and students to help engage students to STEM careers with authentic interactive challenges faced by high tech manufacturing companies today.

During the workshop participants will receive the latest Made in Florida curriculum and will take an amusing tour around FL's most high tech industries. Participants will review a lesson and have fun discovering "What is Made in the Back Yard" that go with the lesson.

#### **Science is the Language of Math!**

Presented By: Letizia Branz and Hollie Rogers

Grade Level: M, H

Join us for an exciting way to explore data collection through a roller coaster engineering design challenge. Participants will be able to apply math concepts while engaged in a hands-on collaborative activity. Through this process, students will experience a STEM project that fully involves them through the Science, the Technology, the Engineering and Math implementation. This lesson will be a roller coaster of adventure!

### **Code Studio: Teaching New Literacy**

Presented By: Anja Dragic

Grade Level: E

Have you wondered how to bring coding to your class/room in an effective and standards-aligned way? Code Studio's courses allow you to spark an interest in students K-12. This free web-based program builds spatial awareness, teaches vocabulary, builds collaborative problem solving, and engages students in meaningful activities with real results.

### **Renewable Energy and Data Collection**

Presented By: Jaclyn Myers

Grade Level: E, M, H

Learn how to apply STEM topics of Science, Technology, Engineering and Mathematics using the real world application of renewable energy!

### **11:45 AM - 12:35 PM Concurrent Sessions:**

#### **Innovative STEM Experiences**

Presented By: Mary Lynn Hess

Grade Level: E

Come explore innovative and creative lessons to effectively teach engineering. Hands-on, real-world experiences will highlight STEM integration that supports the Standards for Mathematical Practices and the Science and Engineering Practices. Discover how to engage students to form a deeper, more meaningful understanding of the concepts taught.

#### **NASA Engineering Challenge: Light but Strong**

Presented By: Dr. Lester Morales

Grade Level: E, M, H

Engineering Design and NASA real World application: Teachers will be introduced to many engineering design challenges and participate in at least one real world problem when it comes to Solar System Exploration and NASA's quest to send astronauts to Mars. Teachers will obtain electronic PDF files of NASA most popular Engineering Design Challenges for classroom use and implementation. Teachers will also be encourage to participate in NASA's Engineering challenge <https://spaceflight systems.grc.nasa.gov/education-outreach/celere/>, <http://rocket21.com/journeytomarschallenge>, <http://www.energy.gov/eere/bioenergy/infographic-challenge>, and more.

#### **Girl Power – How to recruit and retain more girls in your stem programs.**

Presented By: Carol Unterreiner and Luci Coker

Grade Level: M, H

In this session we will share how we have increased involvement of girls in our STEM programs at school. We will share how to implement programs such as our girl's engineering breakfast club, girls engineering days at your school, and field trips to stem businesses that are specifically for girls.

### **Getting the Best Bang for Your Instructional Buck... Plan STEM with Purpose**

Presented By: Amanda Soto

Grade Level: E

Time is our best friend and time is our enemy when it comes to planning. Learn how to plan standards based science instruction with a focus on engaging science activities that lift text from the page and incorporating STEM tasks. Shifting the idea that more may not be better, but different may be what reaches our students.

### **Integrating STEM and Computer Science into the Elementary Day**

Presented By: Debra Kelly Thomas and Annmargareth Marousky

Grade Level: E

Through a National Science Foundation (NSF) STEM+Computing Partnership Exploratory Integration grant, Broward County Public Schools will be developing and testing the effectiveness of STEM Problem-based Learning (PBL) units for grades 3 – 5. These units will be implemented during the literacy block and will incorporate Computational Thinking. During this session, participants will experience sample activities from this project that engage the learner in reading, writing, and hands-on activities in which they use computational thinking concepts such as decomposition to break a real world-problem down into parts and then abstraction to focus on those parts most pertinent to solving the problem.

### **Hydrogen Fuel Cell Technology**

Presented By: Dr. Malcolm Butler, Susan Schleith and Penny Hall

Grade Level: M, H

Using Proton Exchange Membrane (PEM) hydrogen fuel cells, participants will explore the basics of hydrogen fuel cell technology under the guidance of staff from the Florida Solar Energy Center (a research institute of UCF) and UCF School of Teaching, Learning and Leadership. Participants will discover how this technology works, how it is being used and its importance as a tool for reducing carbon emissions. Pedagogy, implementation strategies and correlation to NGSS and Sunshine State Standards will be discussed. Door prizes!

### **1:40 PM - 2:30 PM Concurrent Sessions:**

#### **Squishy Circuits and the Engineering Process**

Presented By: Amy Trujillo and Rachel Knight

Grade Level: E

Want to create your own electrical circuits with dough, a battery, and a light bulb? This is the workshop for you. Participants will be able to design and redesign their own squishy circuit so they will be able to lead their students in the same process. Participants will work through the engineering process and will record their steps in their STEM notebook. There will be time at the end of the session to discuss resources, including a standards alignment and a list of related articles and videos that go along with the lesson.

### **Finding Time for STEM in Your Classroom**

Presented by: Randy Stowers

Grade Level: E, M

Learn how to adapt an existing lesson plan into a STEM lesson. This cross-content, multi-disciplinary approach helps create time in your schedule by integrating STEM education into required, core content areas.

### **Help is on the way! - A Unit on Sinking and Floating**

Presented By: Robin Guenther

Grade Level: E

Help is on the way! This unit takes K-2 students through the entire Engineering Design Process. They will review key science concepts to assist them in engineering a rescue craft to save their LEGO (or some other-Teddy Bear counters) friends who are stranded on an island. Unit & lesson plans, PowerPoints and student engineering notebooks will be shared. Prepare to roll-up your sleeves and dive into this STEM unit.

### **Middle Grade Blue Prints**

Presented By: Tim Ruddy and Amy Kopach

Grade Level: M, H

Using the 123D Make Intro app, the students will be given cut outs to a 3D model of their choice. The students will be asked to assemble the 3D version of the shape chosen and then write the instruction manual on how to assemble the 3D model. After the engineering and the creation of the instruction manual, the students will then have the freedom to explore and create their own 2D design and convert that to a 3D model. \*Activity requires an app

### **Implementing STEM/Modeling & Simulation in the Classroom**

Presented By: Henry (Hank) Okraski and Lindsey Spalding

Grade Level: M, H

Central Florida is the nation's epicenter for Modeling & Simulation (M&S) technology, employing thousands. The National Center for Simulation (NCS) has developed an M&S curriculum resource and certification program (approved for Florida CAPE funding) for high school students. These will be explained in the workshop. Paul J.Hagerty High school in Seminole County is the "Flagship" school with special emphasis in M&S. The workshop will highlight the lead teacher's experience in developing lesson plans, identifying and demonstrating the modeling, simulation, animation and gaming software tools used in class. Students will demonstrate.

## **2:40 PM - 3:30 PM Concurrent Sessions:**

### **Hex Bug Simple Machine Obstacle Course**

Presented By: Sue Curry and Debbie Smith

Grade Level: E

Hex Bugs are tiny robots with a mind of their own. Participants will use the Engineering Design Process to construct an obstacle course demonstrating an understanding of the 6 Simple Machines. The challenge: Can you guide the Hex Bug's movements to use the simple machine obstacles that are incorporated into your course?

### **Energy Transfer**

Presented By: Alicia Foy

Grade Level: E

Electricity can be generated in many ways using renewable resources. Fifth grade students show off their STEM skills by generating electricity for their own model city using wind, water, mechanical and solar resources. Come visit a mini version of Electric City and take away useful ideas and a lesson plan that includes multiple Math, Art, Engineering, Technology and Science Benchmarks and activities.

### **Engineering on a Budget**

Presented By: Nicole Spain

Grade Level: M

Think engineering projects are too expensive to implement in middle school? This presentation will teach you how to implement a materials budget for your students to control cost and teach your students budgeting skills. To practice you will use the engineering design process to build a rocket platform that can hold a cup of marbles and withstand a marsquake using everyday items like straws and Popsicle sticks. In addition, you will leave with access to multiple engineering design projects that align to middle school science and math standards.

### **Engaging Minority Students in Web Programming**

Presented By: Ronnie King

Grade Level: M, H

Underprivileged and minorities are underrepresented in the fields of STEM. Specifically in the area of Technology. We will discuss proven strategies, resources, and exercises that will specifically prepare underrepresented students for a career in Technology.

### **This Is Rocket Science!**

Presented By: Jack "The Rocketman" Colpas

Grade Level: E, M, H

20 attendees receive model rocket kit (\$20 value)

To get kids interested in STEM - you first have to get their attention. The only thing that gets more attention than a rocket launch - is a rocket competition.

Turn your kids on to STEM and honor Christa McAuliffe with the 10th annual Reach for the Stars ~ National Rocket Competition. Watch their minds and rockets soar! Safe, Fun, Affordable. Run at your location. No travel expense or hassle. Can be used as a fund raiser. Recommended by author - Homer Hickam (October Sky), ten astronauts and many others.