

FEEC Presentation Briefs: March 3rd, 2023

Concurrent Workshop Sessions

Exploring Cybersecurity Concepts in the Metaverse

Presented By: Deshjuana Bagley

Grade Level: Middle and High

Create browser-based virtual worlds filled with 3D models and engaging applications to teach students concepts in cybersecurity, coding, and electronics.

Exploring Jupyter: Combining Rich Documentation with Executable Code for Teaching and Learning Data Science with Python

Presented By: Jared Carter & Michael Roberts

Grade Level: Middle and High

Collecting, analyzing, reasoning with, and drawing conclusions from data, or “data storytelling” is a critical skill set that has important workforce and cross-curricular qualities but is not explicitly taught in schools. In this interactive workshop, teachers will gain hands-on experience with Jupyter notebooks to write code, visualize data, and provide context. First, participants will follow a facilitator-led exploration of a popular song dataset using an example Jupyter notebook. Next, participants will break into groups to ask and answer their own questions using the same dataset. Creative Commons-licensed Jupyter notebooks and lesson plans will be provided.

Improve STEM Education by Implementing Individualized Format Readability

Presented By: Stephanie Day, Ben D. Sawyer, & Rochelle Rodrigo

Grade Level: Elementary, Middle, and High

The aim of this workshop is to provide educators with the latest research and technology to enhance format readability in STEM education. Format readability refers to the visual presentation of digital text (font, spacing, etc.). Research supports that children benefit from personalized text formats that optimizes their reading performance and enhances their engagement with digital learning environments. In this workshop, educators will (1) learn about how formatting features can support learning, (2) utilize our readability features Sandbox, and (3) discuss how educators can support learning with font literacy and the implications for future development of technology in STEM learning tools.

Engineering Activities using Micro: bits to Support Science Standards in Middle School

Presented By: Krista Dulany, Olivia Lancaser, Nancy Ruzycski

Grade Level: Elementary, Middle, and High

During this workshop, participants will have a hands-on learning experience focused on programming and computational thinking using Micro:bits, user-friendly microcontrollers designed for students, and the Microsoft MakeCode programming environment. Participants will engage in multiple activities designed to bring learners through essential coding principles that can be applied to design-based challenges. Participants will create a button-operated LED light using the Micro:bit. Participants will then use the Micro:bit to collect and analyze light intensity data to inform the design of an automatic smart light. Teachers will be provided with the facilitator guide of the workshop activities.

The Science of Superheroes

Presented By: Costas Efthimiou

Grade Level: Middle and High

This talk will explain how physics demos can be used to demonstrate "superpowers" of the human body. In particular, it will demonstrate the ability to have superstrength (Superman), the ability to handle fire (Pyro), the ability to handle ice (Iceman), and the ability to handle electricity (Electro).

Reading, Writing, and Math, OH MY! Cross-curricular connections with STEAM

Presented By: Jessie Fiffick & Sarah McBride

Grade Level: Elementary

STEAM is so much more than science standards. Learn how to create themed units around an overarching question: "How can we make the world stronger for our future?" Participants will engage in hands-on activities and collaborate with peers to develop a framework for a themed unit that includes STEAM projects.

Promoting Equitable Sensemaking in a STEM Classroom Using Plants

Presented By: Mary Lynn Hess

Grade Level: Elementary

Current trends highlighting plants using 3D Learning that support sensemaking in the K-5 classroom will be presented. Participants will be provided hands-on, real-world lessons that engage students with a deeper and more meaningful experience that center around Scientific and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts.

A Force to be Reckoned with: Forces of Flight

Presented by: Missy Jones

Grade Level: Elementary

Ever heard of Bernoulli's Principle? Want to learn how things fly? Well, come and learn about how power Air can be and how we can use it to make things fly. Participants will learn about a Program called Air Camp for Teachers and CAP which help to provide recourses and lessons on flight. Participants will then take part in several hands-on activities focusing on the four forces of flight. They will explore how powerful air can be and how to guide it to move objects. They will learn about Bernoulli's Principle and design their and test their own flying machines.

Learning Science by Doing Science

Presented By: Michael Kmietowicz

Grade Level: Middle and High

Orlando Science Center offers Professional Development for K-12 educators that demonstrate effective STEM teaching practices. In these workshops, participants experience lessons from their students' perspective and discuss pedagogical strategies used, as well as how to carry out these lessons in their classrooms. Materials kits are available for an additional fee. In this session, participants will experience one of these lessons from the 6-12 program, demonstrating an innovative way of introducing the concept of natural selection. Participants will receive a lesson plan and materials list to do this activity in their own classroom.

How to Design STEM Labs to Enrich and Engage

Presented By: Jeffrey Krob, Sally Brichler, Christopher DeRosier, Sharron DeRosier, & Jacqueline Drescher

Grade Level: Middle

90+ teacher created hands-on STEM labs that were designed to give our students experiences beyond the standard curriculum. We will share the process that we used to create these labs and share out some of our labs.

Digital Portfolios in the Classroom

Presented By: Michelle Lindquist

Grade Level: Elementary, Middle, and High

In this session, attendees will learn hands-on about how students can construct and utilize a Google Digital Portfolio to exhibit their STEM work throughout the year. Participants will learn the planning and work that goes into facilitating the establishment of the portfolios, how to share them with the community, and the benefits they have for students. They will also learn the importance of STEM journaling.

Computer Perception: Designing the Vacuum of the Future!

Presented By: Ian Lutticken

Grade Level: Middle and High

Robotic vacuums are amazing tools, but how could we make them better? Our activity examines the sensors of robotic vacuums and how they are used by the machine to build models and create meaning. The lesson touches on Computer Perception, Artificial Intelligence (A.I.) and a high-level view of algorithms and modeling. Learners will get an opportunity to pitch designs for their own vacuums of the future and explore creating their own algorithms. While the lesson uses robotic vacuums as its real-world example, the content will be easily reconfigurable to any other Computer Perception or algorithmic thinking scenario.

The Power of Student Choice and Voice in the STEAM and PBL Classroom

Presented By: Andrew Medearis & Amanda Frassrand

Grade Level: Elementary, Middle, and High

Engaging students where they are at is a challenge in every classroom in every school throughout the United States. How can teachers create authentic learning environments where student choice drives learning and projects? Project Design and option planning is the key to creating an authentic, student driven STEAM/ STEM / PBL learning environment!

Parabolic Partnerships - Bringing Microgravity Research in to the K-12 Classroom

Presented By: Danielle Miller & Adam LaMee

Grade Level: Middle and High

UCF's STRATA-2P was a parabolic flight experiment to investigate how simulated moon dust interacts in a microgravity environment. Three UCF area K-12 teachers were selected as Teachers-in-Residence to help construct and test equipment and develop classroom lessons to help students learn about past, present, and future lunar missions. We'll lead a hands-on session where participants can go through those activities, including a lunar landing site selection collaborative gallery walk, and introductory-level coding with real experimental data.

Using a Miniature Golf Hole Project to Inspire Students to Dig Deeper

Presented By: Sandra Moss

Grade Level: Elementary, Middle, and High

Do you want your students to be 100% engaged for weeks? The Miniature Golf Project is a great project to incorporate many different standards, no matter your subject matter! The project can be done over consecutive days or stretch it out for one day a week for weeks. It can easily be adapted for all grade levels. We can measure angles, create slopes, determine areas and perimeters. The theme can include any topic you wish: a particular science, history or ELA standard you want to reinforce or introduce. Take your class from good to great! This project will last in your students' memories for years.

Mathematics games involving visualization thinking

Presented By: Enrique Ortiz

Grade Level: Elementary, Middle, and High

Visualization thinking is an important and often ignored component of STEM education. The games involve the use of geometric ideas to complete tasks. They may support the use of measurement, transformational geometry and computation of area. Participants will have the opportunity to play two original games that support visualization thinking, problem solving, perseverance, creativity and engagement. We will discuss possible adaptations.

SLAM: Science Leadership and Mentoring

Presented By: Cassie Parker, Kelly Tran, & Anne Bubriski

Grade Level: Middle

Science Leadership and Mentoring (SLAM) is a year long, after-school curriculum based mentoring program, pairing a 7th grade girl with a UCF women student mentor. SLAM empowers youth to be assertive, brave, confident, independent, inquisitive, and proud leaders in STEM. SLAM seeks to promote inspiration and excitement into STEM fields and careers while also building leadership abilities such as problem-solving, teamwork and cooperation, cultural identity and ethnic pride, advocacy for positive change, and goals for the future. We believe all students are influential leaders with innate leadership abilities. Our vision is to examine the social and cultural expectations for middle schoolers, investigate existing themes of girlhood and leadership, and engage students to empower themselves to be leaders in STEM. SLAM to create spaces where young people can share their real-life experiences, build themselves up and learn from one another.

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.

Integrating Coding in Python in your Math Classroom on TI-84 CE or TI-Nspire CXII

Presented By: Beth Smith

Grade Level: Middle and High

Explores the basics of coding in Python, learn everything beginners need to get started coding in their math classroom. Coding is a skill that is in high demand and can reinforce knowledge. The logic of the code and the math it describes share similarities that can deepen understanding. Additionally, coding promotes critical, computational, algorithmic, and creative thinking. This session will give you the basics to get started coding on the TI-84 Plus CE or the TI-Nspire CX II.

Engineering Affinity in Minority Communities A Justice-Oriented Approach Connecting Schools and Communities

Presented By: Corydon Strawser

Grade Level: Elementary, Middle, High

STEM affinity is the first step and the most important part of science and engineering, or STEM, learning. STEM learning is never neutral because it either supports learning conforming to the culture, or it engages minority youth in a practice of liberation (Friere 2000). STEM affinity calls attention to how learning involves an awareness of understanding how inequality operates in society, including its structural roots, and the agency to engage in action toward social transformation. It is a powerful way to connect classrooms and communities toward the goals of justice-oriented STEM education.

Presented By:
Grade Level:

Presented By:
Grade Level: