

FEEC Presentation Briefs: February 25, 2022

10:20 – 11:10AM Concurrent Workshop Sessions

We Go as the Artemis Generation: Leveraging NASA's NextGen STEM Resources to Engage Youth

Presented By: Dr. Samuel Garcia

Grade Level: Elementary, Middle, and High

In this session, attendees will learn about NASA's Artemis Missions to the moon and explore educator resources designed to inspire and educate the next generation of space explorers.

STEM Inquiry and Problem-Based Learning in the Garden

Presented By: Ms. Mary 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. Brainstorm, predict, construct, analyze and test your model to keep the bunnies out of Mr. McGreely's garden.

Ice, Ice, Baby: What can we learn from ice

Presented By: Dr. Rachel Hallett-Njuguna & Dr. Mabry Gaboardi-Calhoun

Grade Level: Elementary and Middle

In this session, you will learn 2 ways to use ice as a catalyst for further scientific discussion. We will get hands-on with some homemade ice cores to see how older students can explore our Earth's past. Then we will discuss how "Martian" ice samples can spur younger students' curiosity.

Problem Solving STEAM in Elementary and Middle School

Presented By: Mr. Nathan Hicks & Mr. Steve Cercone

Grade Level: Elementary and Middle

This session will show various ways to teach STEAM in an elementary and middle school classroom so students will become engaged and stay engaged throughout the school year. It will also show how to keep students from getting fatigued or bored while engaging them with problem solving.

STEAM in Title I

Presented By: Mrs. Ashlynn Ramirez, Ms. Olivia Hallac, Ms. Vanessa McElwayne, Ms. Shermeka Scott, & Ms. Donarsha Correa

Grade Level: Elementary

Participants will go through a workshop to learn through what goes into the planning process when planning STEAM lessons for students, keeping social emotional considerations at the forefront of our planning process.

Enduring Effect of Project Based Learning

Presented By: Mr. 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.

12:20-1:10PM Concurrent Workshop Sessions

Teaching the Nature of Science through Gizmos: A Digital 5E Lesson Plan

Presented By: Ms. Kelsey Beeghly

Grade Level: Elementary and Middle

In this digital lesson following the 5E instructional model, students will design and complete an experiment using the Gizmos simulation “Growing Plants”. This lesson is meant to introduce and develop accurate conceptions of experimental design and the role of scientific models. The lesson plan is adapted separately for upper elementary and middle school students. Participants will explore Gizmos and get ideas on assessing and improving students’ understanding about the nature of science. Come and learn more about how this simulation teaches about an important but commonly misunderstood type of scientific investigation and its place in science: the controlled experiment!

STEM Inquiry and Problem-Based Learning in the Garden

Presented By: Ms. Mary 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. Brainstorm, predict, construct, analyze and test your model to keep the bunnies out of Mr. McGreely’s garden.

Making Coding Concepts Accessible- An Example Lesson on Conditionals

Presented By: Mrs. Julie Perry

Grade Level: Middle

I used this lesson in conjunction with the Ozaria curriculum to introduce the concept of conditionals to my 7th and 8th grade coding I students. The use of manipulatives and connection to their prior knowledge and everyday lives makes the lesson more accessible to them.

STEM at OCVS

Presented By: Mrs. Ana Belen Ramos

Grade Level: Elementary

STEM in the virtual environment requires thinking out of the box in order to bring the hands-on aspect to the homes of our students. Orange County Virtual School strives to bring this total physical response to every child enrolled and develop in them the love for science and math within the advantages of technology. English Language Learners are able to participate in advance courses once the adequate supports for language acquisition are embedded within the Science and Math experience.

Improved Student Learning of Engineering Through Inquiry-Based Modeling Lessons Developed Using A System Thinking Perspective

Presented By: Dr. Nancy Ruzyccki, Dr. Lorelie Imperial, & Dr. Krista Dulany

Grade Level: Elementary, Middle, and High

This workshop will engage K12 teachers who are teaching engineering and other professionals in active, hands-on, and collaborative engineering lesson planning activities that utilize a framework incorporating a blend of essential learning perspectives: system thinking, conceptual modeling, inquiry to develop conceptual models. The workshop participants will 1) gain a deeper understanding of each learning perspective; 2) learn how to effectively incorporate them into core content lessons to support students' conceptual model development, and 3) apply them in lesson planning and staging. The facilitators will guide workshop participants through mapping their lesson using grant frameworks.

Applying Algebra & Geometry Concepts through TI-Robotics & Coding

Presented By: Dr. Kimberly Sparger & Mrs. Beth Smith

Grade Level: High

Using TI-84 graphing calculators and rovers, participants will apply Math concepts and formulas through Robotics and Coding activities, with an emphasis on situational learning and developing a deeper understanding of Algebra and Geometry topics. The session will include collaborative station options:

1. Algebra1 (Coding with the Slope Formula),
2. Geometry (Robotics with the Pythagorean Theorem),
3. STEM (Let's put Math and Science in Motion!- *connect math and science concepts by programming a graphing calculator to drive a Rover to explore position, time, speed, and velocity...no coding experience needed.*)

1:20-2:10PM Concurrent Workshop Sessions

Bringing FIRST Robotics into the classroom

Presented By: Mrs. Wendy Austin

Grade Level: Elementary, Middle, and High

FIRST is a global non-profit that used robots to get students interested in STEM. We have programs for ages 4-18. This workshop will walk through some of the activities we do with our FIRST LEGO League Challenge students (ages 9-14). We will also talk about what we do in the other levels of FIRST. There is \$80 million dollars in scholarships available through this program.

Radio Astronomy in the Science Classroom - A daytime activity!

Presented By: Mr. John Clark

Grade Level: Middle and High

Use radio Astronomy to offer students a hands-on way to enhance their learning of the EM spectrum, Doppler Effect/Red Shift, Kepler's 3rd law, circular motion, or astronomy. NGSS Standards are supported. Ideas can be incorporated into your existing lessons or taught separately. Lessons provided. Three takeaways:

1. Students can get to do real astronomy with a telescope they built.
2. Radio astronomy can be done during class time as radio wave detection is not affected by daylight and enhance student engagement in existing physics lessons.
3. Students will learn about the unique nature of galactic rotational behavior as compared to circular motion and planetary motion under Kepler's Laws.

Mission to the Moon

Presented By: Mrs. Missy Jones

Grade Level: Elementary

Explore the Giant Moon Map and explore hands-on activities to engage your students in learning about past and future moon missions.

STEM Inspired by Art Masters

Presented By: Ms. Jennifer Jones & Mrs. Kathryn Senkarik

Grade Level: Elementary

In this presentation, we will explore how to use famous works of art by artists such as Vincent Van Gogh, Dale Chihuly, and Yayoi Kusama to inspire cross-curricular STEM units.

The impact of STEM, Systems Thinking, and Authentic Learning in the Problem and Project Based Learning Classroom

Presented By: Mr. Andrew Medearis

Grade Level: Elementary, Middle, and High

In this demonstration and discussion, participants will learn about the impact of STEM, Systems Thinking, Authentic Learning and student choice and voice in the Problem and Project Based Learning (PBL & PrBL) classroom. We will discuss project design, student leadership and ownership, and how to build a web of support/ contacts throughout the Central Florida community to share information, best practices, and build projects across counties.

Exploding Dots and Teacher Math Circles

Presented By: Mrs. Amy Trujillo

Grade Level: Elementary and Middle

Explore math in a non-threatening way! Exploding Dots, from The Global Math Project, has a series of nine lessons that start with setting the stage for place value, base ten, addition, multiplication, subtraction, long division, decimals, to polynomials. In this session, we will be learning a birthday mind reading trick and dipping our toes into the mathematical waters of place value. All are welcome to this session but educators that don't feel as confident in math may really benefit from this activity and discussion and will leave with resources about The Global Math Project and Teacher Math Circles.

2:20-3:10PM Concurrent Workshop Sessions

But there's no time! Quick lesson plan modifications to tie STEAM to elementary standards

Presented By: Mrs. Mandy Fillenwarth & Mrs. Sarah McBride

Grade Level: Elementary

We all love grand, multi-day STEAM projects, but who has the time to constantly fit in projects and teach all the elementary standards? We will share some tips, tricks, and ideas for modifying plans to incorporate STEAM across all elementary curriculum areas. We will share some of the successes and challenges of becoming a new magnet program. Participants will engage in a hands-on lesson and collaborate with peers on how to tie STEAM to K-5 standards.

Computer Science Is for Everyone

Presented By: Mr. Michael Kmietowicz & Ms. Yadira Lopez

Grade Level: Middle and High

Ready, set, draw! See how computer science, math, and art meet in this lesson from Code.org's Computer Science Discoveries course. Participants will engage as students as they learn how humans tell

computers to draw images, laying the foundation for animation, games, and more! Attendees will also learn how to find resources to implement this free curriculum in their classrooms, whether in-person or virtually.

Chutes and Ladders and Robots

Presented By: Ms. Teri Mincey

Grade Level: Elementary

Do you remember playing Chutes and Ladders as a kid? How about playing a life-sized version? How about playing with robots? In this lesson, we will learn to use small robots like Bee-Bots and Dash to play Chutes and Ladders in an exciting, hands-on, Math-mazing way! Learn all the ways you can incorporate technology and math with a giant board game. Learn how to modify the game for tons of different grade levels and abilities.

Martian Rocks - A New Pedagogical Approach to Closing Achievement Gaps in Underrepresented Minority Classrooms

Presented By: Dr. Corydon Strawser & Mr. Lord McConnehead, III

Grade Level: Elementary, Middle, and High

During this hands-on session, an extension to existing NGSS pedagogical approaches to science and engineering education will be presented. Participants will discover how access to advanced research tools can help close achievement gaps in low income and underrepresented communities.

Wakelet for the Six C's

Presented By: Mrs. Amy Trujillo

Grade Level: Elementary, Middle, and High

Wakelet is a free digital tool for both students and educators at all levels that can be used for curation, collaboration, creativity, communication, citizenship, and critical thinking. Hear about Wakelet School, the Student Wakelet Ambassador Program, and how you can start the path to become a Wakelet Community Leader, while you see examples of how it is used in classrooms, learn how to curate a collection, and collaborate on a shared Wakelet. Participants will have resources in both digital and print to take home with them to reference.