STEAM Basics- Life Long Skills

Prepare students to participate in successful and productive STEAM activities by helping them develop seven basic skills. These include asking questions, collaboration/communication, gathering data, making observations, giving effective feedback, using the design cycle, and reasoning. These skills can be learned through playful, hands-on experiences in the classroom. The skills presented are appropriate for ALL content areas and give students a firm foundation of life-long skills that are useful in the real world.

Presenter(s): Cheryl Callighan & Cindy Warren-James, NIU STEAM

NASA Robotics Races: Learning to Code with a Kinesthetic Activity

Explore and Experience a STEAM session with a kinesthetic inquiry based learning activity related to robotics and coding. Practice the challenges of operating a robot on Mars from Earth. In this simulation, the rover drivers upload their commands to their rover (blindfolded teammate) to travel around obstacles and complete the mission. The activity and NASA educational websites introduced will provide the educators new curriculum ideas to assist in reaching the NGSS and Common CORE learning outcomes standards. The PowerPoint will be available to all participants. The PowerPoint will include all of the videos and activities including the tips and pointers.

Presenter(s): Susan Kohler, NASA

Creating & Enriching Your STEAM Curriculum - One teacher’s approach to high-quality STEAM instruction

A STEAM Lab or Makerspace is a place where students gather to create, invent, tinker, explore, discover, and collaborate using a variety of tools and materials while developing their plans and designs into prototypes. This session will explore one Chicago Public School teacher’s development of a successful comprehensive theme-based STEAM Curriculum guided by student interest and wonderings. Classroom organizational tools such as her interpretation of the Engineering Design Cycle, Quarterly Maps, and assessment strategies, including project and classroom rubrics, will be discussed.

Presenter(s): Deanna Sanders, Chicago Public Schools
Fun with Food! Using Food as a Tool to Teach Mathematics and Science

Fun with Food! Using Food as a Tool to Teach Mathematics and Science. Food and nutrition subject matter is an ideal context for creating authentic mathematics and science learning experiences. This educator workshop will begin with a presentation on the characteristics of authentic learning, discuss how food provides an ideal context for authentic mathematics and science learning experiences, and will share FM K-12 resources. After workshop participants are familiar with the FM Initiative and available resources for authentic mathematics and science activities, participants will then be provided an opportunity to have some fun with food. Educators will experience some of the newest resources available to informal science learning environments called FAN Cards. These resources are designed to introduce more formal FM classroom activities or can be utilized as stand-alone activities for STEM fairs, museums, or after school programs. At the completion of this workshop, participants will be able to use food and nutrition as a tool to help improve their students’ mathematics and science learning and skills. Educators will also learn more about how numeracy and food science literacy apply to managing personal health. Registered Dietitians will be available to answer questions about nutrition assessment, food composition, and more.

Presenter(s): Melani W. Duffrin & Kelly Furr, NIU

Digital Audio for Creative Projects

In this hands-on, interactive presentation you will learn about the basics of digital audio and how to use audio in your creative projects. We will be focusing on foley art, impulse responses, and sound libraries. With these audio skills you will be able to create original sounds and acoustic environments for your games, simulations, and multimedia projects.

Presenter(s): Michael Taylor, Silo and Sky Productions

Rolling into STEAM: Designing Physical Games Across Disciplines

Educators from Lake Forest Country Day School will showcase examples of how STEAM/PBL concepts were added to humanities, science, and even SEL curriculum. Attendees will have the opportunity to create their own discipline-focused and standards-aligned board games.

Presenter(s): David Muniz, Amy Hintzman, Steve Robnick, & Katie Willis, Lake Forest Country Day School
Tactile programming: LED light up Arduino sculptures

Learn how to engage students in programming and the design process through the development of an aesthetic project. We will review a STEAM unit where students develop a project plan, work through the iterative design process and build an LED sculpture. In the unit, students incorporate basic circuits and an Arduino board to create a program that utilizes the platform-agnostic www.codebender.cc IDE (Integrated Development Environment.) www.codebender.cc allows students to use both graphical and text-based programming to tell an Arduino board to turn on and off different LED lights. This approach allows the students to see an application of coding in visual and time-based output. The unit is designed to include several working sessions where students follow a simple design process: (1) define the problem, (2) investigation and research, (3) generate ideas, (4) make the prototype, (5) present, and (6) refine. The project culminates in students connecting their Arduino sculpture to a 9v battery source, allowing the sculpture to work independently from a computer and able to be taken home. Students have a physical manifestation of the coding they have learned that they can share with friends and family. Additionally, students will learn about applications of coding, patterning, and lights as it relates to scientific and artistic research and production. Participants in this session will get to create a simplified version of this project as individuals, pairs, or in small groups.

Presenter(s): Steve Gross, www.rubberbandproject.org

Improv: Creating Positive Climate With No Script

This workshop will offer up hands-on improvisational acting games with the purpose of building positive climate and community in the classroom, school, or library.

Presenter(s): Eric Kallenborn, Lit-X