Innovation Workshops - Detailed Descriptions

Each of these workshops can be offered as a full-day (6 hr) or half-day (3 hr) program. In each workshop, participants will work in teams and receive first-hand experience in a carefully designed Project-Based Learning activity. During the course of the activity, the facilitator will highlight key aspects of the PBL approach such as:

- Essential Elements of Project Design
- Effective Project Launches
- Feedback & Revision
- The Iterative Design Process
- Collaborative Rubric Designs & Authentic Assessment
- Publication / Performance

Additionally, the facilitator will highlight the value of integrating STEM concepts and the benefits of hands-on, experiential learning.

While each workshop focuses on skills and concepts for a particular grade-level, the concepts of PBL design and STEM integration are transferable across all grade levels. Thus, any of these workshops can work as a professional development activity for teachers of all grade levels.

Paper Circuits -- Using LEDs, Batteries, Conductive Pens, Copper Tape and other electronic components, participants will design an illuminated, digital scene from a story they have read.. STEM topics include: Electricity, Voltage, Circuit Design, Polarity, switch design, prototyping.

Squishy Circuits — Participants use a conductive "play-doh" substance and electronic components to sculpt an electronic version of a character from a popular children's story. STEM topics include: Electricity, Insulators vs. Conductors, Polarity, Circuit Design, Switch Design, Prototyping

The Great Robot Escape — Teams program a simple robot to navigate its way out of the "forbidden forest." STEM topics include: Algorithmic Thinking (programming), Prototyping, Use of Improvised Materials to Solve an Engineering Challenge.

Rube Goldberg Challenge — Teams are given one component of a Rube Goldberg machine to complete. When complete, all teams join their components together. STEM topics include: Potential Energy, Simple Machines, Prototyping, Use of Improvised Materials

Coding and Game Design — Participants design a video game and build it using a block-based programming language. STEM topics include: Algorithmic Thinking (programming), Conditionals, Loops, Variables, Effective Game Design.

Electronic Inventions with Cardboard — By adding electronic components such as a Makey Makey or Pico-Board to cardboard, foam core, hot glue, and other crafting materials, project teams work together to solve an engineering challenge. STEM topics include: Algorithmic Thinking (Programming), Using Improvised Materials to Solve an Engineering Challenge, Design Thinking Process, Prototyping.

Building Bridges -- Given a small number of straws and nails, teams compete to build the most efficient cantilevered structure that can support a given weight. Efficiency is measured by dividing the length of the structure by its mass. STEM topics include: mass, cantilever, vector

Blowing in the Wind -- Teams compete to design a wind turbine that will generate the most amount of energy and measure their results by connecting their invention to a motor to measure the voltage produced. STEM Topics include: Voltage, Current Turbine, Torque, Gear Ratio.

Keep It Afloat -- Using basic crafting materials, construct a boat that will carry the most weight across a body of water. STEM Topics include Density, Mass, Volume, Buoyancy, Displacement.

Speed Racer -- Teams will design a vehicle that will reach the highest speed going down a 6' incline. STEM topics include: Mass, Gravity, Acceleration, Friction

Half-Day Schedule	Full Day Schedule
Introduction / Project Launch (10 min) Initial Build (30 min) Prototype Review - Gallery Walk (20 min) Project Revision (90 min) Presentation De-Brief (30 min)	Introduction / Project Launch (10 min) Essential PBL Components (20 min) Initial Build (30 min) Break (15 min) Define success and create rubric (10 min) Prototype Review -- Gallery Walk (20 min) First Revision (60 min) Lunch (30 min) Second Revision (90 min) Break (15 min) Presentations (30 min)

Pricing

Pricing is based on a Single Facilitator and up to 20 Participants. Call or email for pricing for larger groups. Travel charges may apply for workshops outside of the New York / New Jersey area.

- Half-Day Workshop -- $1000
- Full-Day Workshop -- $2000