

STEM Grant: Industry Exposure Day



Circuitry



Robotics



Math

The EduSerc Young Innovators / HOTSPOTS Industry Exposure Day would be designed to provide youth with an interactive and innovative foundation on academic skills with a concentrated focus on mathematics, robotics and electronics. Designed and administered by EduSerc, this critical thinking-based program model will provide tutoring and hands-on learning in **Algebra, Geometry, Circuitry and Basic Robotic Program (Novice Level)**.

Industry Day Activity - Daytime

Students would participate via their class in basic simple coding exercises to have robots move and do simple movements. Students would rotate in small groups to learn how to turn on LED lights on robots and move them left and right to make it go through a simple maze.



Rotated Classes Schedule

15 minute Segments

Building the Maze

- 1) Students will learn how to build a section of a maze using simple math and geometric shapes
- 2) Sections can be walls, bridges, tunnels, street lights or other items that we will guide them to develop
- 3) Students walk from one station to the next picking up materials to build their maze section and including it into a large design on the floor.



25 minute Segments

Programming Lights / Robot Movement

- 1) Students will learn how to program an LED light and make it blink in various ways
- 2) Students will also learn how to move their robot left, right, back and forward for movement in the maze.
- 3) Groups will have one aspect (either lights/sensors or movement of the robot) they will control.



Parent / Student Night Activity

In the evening, parents can participate with students to develop scenarios on how they drive their car and become engaged with students to learn how traffic systems work in the real world. Parents will be given a simple task sheet with scenarios to see if they can be simulated in the maze designed by the student. If there is any advice on how to make it better, parents can make a suggestion and provide it to students or help them update their solution (if needed). Each parent can participate by adding only one additional maze aspect or switching up the maze to test the student's programming and logical thinking skills.

This is a simple and fun interactive activity (as a large puzzle) for the parents and students. The students are building the puzzle pieces and the parents are creating a new puzzle when they arrive to test their electronics (if they are still working).

Professional Development - Common Core Alignment

EduSerc ensures that its program delivery model aligns with the mastery schedule provided within the Common Core initiatives in the United States. Through this proposed delivery, EduSerc's goal is to ensure all students not only master each level, but to influence results to be demonstrated positively in the classroom to improve test scores and core foundational knowledge.



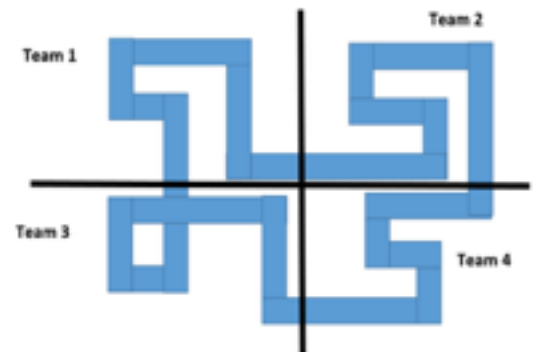
EduSerc's directives are as follows:

- Provide professional development training to support staff on the entire project (to assist and training) and interview HOT SPOTS/school staff to understand core strengths and challenges students are having with Math
- Based upon the time of year, retrieve syllabus from math teachers to develop a complimentary schedule.
- Align STEM activities to meet and exceed goals for HOT SPOTS and the school.
- Retain interest in mathematics through healthy, fun and strategic group-based interaction with students and staff

Training Program Plan / Outline

PD Training Outline:

- Project Overview
- Concepts and Common Core Mapping
- Simple Tasks for the following:
 - Constructing Building a Maze / Street Lights (Math/Construction)
 - Programming Lights / Robot Cars (Logical Thinking)
- Team Building / Assignments / Practice



Materials Used: Robot Kits, Laptop Computers, Foam Core, LED lights, Hot Glue Guns/Tape, Extended Wire

Number of Sessions

1 sessions

Your Industry Exposure Day Includes...

- **1 Full Day – School wide Activity:** (8am – 2pm)
- **1 Full Day – PD Training (Supporting Teachers at School for Activity)**
- **Number of Students:** Varies by classes (20-25 per class)
- **Estimated Instructors/Trainers:** up to 2 instructors
- **Use of EduSerc Learning Kits:**
 - Young Innovators Robotic Kits (full robot kits w/ extended parts and sensors)
 - Training materials for teachers during training
 - Include foam core, batteries, LED lights, solder, electrical tape, packing tape, hot glue gun,
 - 4 – 5 mobile laptops for robotic programming